

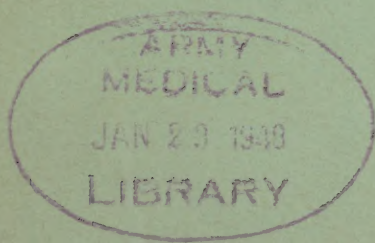
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ARMY SERVICE FORCES

ANNUAL REPORT

FOR THE FISCAL YEAR 1945



ANNUAL REPORT

of the

ARMY SERVICE FORCES

for the Fiscal Year

1945



ARMY SERVICE FORCES
OFFICE OF THE COMMANDING GENERAL
WASHINGTON 25, D. C.



MEMORANDUM FOR: The Under Secretary of War
The Chief of Staff

I herewith submit the annual report for Army Service
Forces for the Fiscal Year, 1945.

A handwritten signature in cursive script, appearing to read "B. Somervell".

BREHON SOMERVELL
General, Commanding

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ANNUAL REPORT FOR 1945

INTRODUCTION

Since the Army's supply, technical and administrative services were merged into a single unit in March, 1942 to become the Army Service Forces, there has been but one driving force behind all their efforts, but one aim to guide their endeavors, but one single thought in the minds of their leaders—VICTORY. Early victory meant a cessation of battle; early victory meant a stop in the loss of American lives; early victory meant the end of the degradation of countless conquered peoples; early victory meant the return to our way of life and the possibility for liberated peoples who believed in the same ideals to return to theirs; early victory meant the return of the bulk of our soldiers and sailors to their loved ones and the pursuits they wished to follow.

Success of our combat forces depended on the adequacy of the support that ASF might be able to supply. Swift success was imperative and failure unthinkable.

Victory is now ours. Victory in the greatest war of all times has come through the leadership, skill and courage of our fighting men. ASF gave a full measure of support to these men in every quarter of the globe. The knowledge that this was done is ASF's reward for the brains, sweat, courage and perseverance devoted to the task by its millions of soldiers and civilians, men from the professions, industries, capital, and labor.

The pitifully small beginnings available to build an army served only to magnify the enormous task ahead. The struggle during the first 2 years has been set forth in previous reports.

It was evident then even to the layman that the task ahead was well nigh insuperable. TIME, that most precious and most expensive element, would be the major factor in the program. To bolster our own determination and to fortify the weaker spirits ASF adopted a brash and boastful slogan:

"The Impossible We Do At Once; The Miraculous Takes a Little Longer."

It remained to make good. The slogan was tacked to the walls of offices in The Pentagon and in shops, foundries, warehouses, docks, and all manner of places throughout the country. It became the whiplash which drove us day and night. With the gathering might which each addition to the Army in men and material gave us, the tasks became greater, but fortunately so were our means.

The ASF had a job of work to do. Nothing could stand in the way of its swift accomplishment. The problems were manifold. There was the task of digging out enough raw materials to make all that had to be made, and the additional task of convincing a persistent minority

that the military must be served first, at whatever inconvenience to others. There was the business of land on which to build camps and hospitals and airfields and bombing ranges. There was the actual construction to be accomplished swiftly in spite of shortages of labor and materials. Military production had to be expanded. Ports had to be made ready. Millions of men had to be trained to countless jobs.

In those early months only one thing counted. That thing was speed. Speed in getting into military production. Speed in headquarters itself. Speed on the drawing boards of the planners. Speed in the shops and mines, in the forests, and on the railroads and waterways. Speed in the ports and the new depots and camps. Speed in making decisions and in carrying them out.

New plans had to be drawn for new weapons to meet new conditions of war. New tools had to be designed and hammered out to make these new machines. New buildings had to be constructed to house the new tools. New workers had to be trained to use them. New materials had to be found in abundance to replace traditional materials which were scarce.

The ASF faced the problem of managing these diverse and far-flung operations. It had to set up the structure within which they could be made to work. It had to find the men best fitted to accomplish its hundreds of thousands of highly specialized tasks. It had to integrate and coordinate their labors. It had to apply some checks and balances. It had to institute new management methods, improve old ones. It had to design and build the machinery of the largest and most complicated business in history, had to find exactly the right personnel to operate that business smoothly at all levels, had to get immediate results. Its self-imposed slogan drove it relentlessly.

The first year of the Army Service Forces saw the first part of the slogan fulfilled. The ASF accomplished the impossible immediately. It built the plants, tooled them and manned them, designed the new weapons and put them into mass production. The new Army was housed, clothed, fed. We were on our way.

It had been a good start. Now came the second test. Having started, could the ASF maintain its tempo of accomplishment? Could all the new weapons and supplies be turned out in sufficient quantity for our mass Army, on time? There would be mistakes. There would be crookedness. Everyone knew that. There would be false starts, examples of bad judgment, some waste. But would there be enough of these things, caused by the urgency of the demand, to affect the outcome on the fighting fronts of the world? That was the question. One of the miracles has been that there have been so few of these errors of judgment, so few false starts, so little thievery, so little graft or misappropriation of funds.

By this time, the ASF had been recast more than once. Only the producers remained, those who had the courage to take a long chance to attain a difficult end. All others had to go, to make way for men who believed in the slogan, men with enough self-confidence, conceit or egotism if you will, to convince themselves that they could accomplish the impossible at once.

These men came from the Army, from industry, from the railroads and steamship lines, from the laboratories of great universities, from banking and business, from the professions. By the end of the second

year, only 3 percent of the ASF officers were professional soldiers. The others had come from civil life, had put on the uniform and gone to work.

The Army had searched the nation for them and taken men who in their previous experience had gained some understanding of the problems involved. Not one among these new officers, however, had ever faced anything as vast and as demanding as the job before him. Never in human experience had men attempted to do so much so fast, to manufacture on so immense a scale, to ship so many tons of freight, to move so many men, to purchase so many millions of dollars worth of anything, to design so many machines, to weld so many diverse activities together and to attempt so much in new and untried devices.

Production mounted steadily. Weapons poured out of new munitions plants. Scientists found means of using new raw materials to take the place of scarce substances; engineers found new means to produce more of everything faster. Military men designed new weapons, improved old ones. Mechanics and farmers, housewives and preachers and school children stood along the assembly lines of the nation turning out the tools of battle.

Our troops already were in action at the beginning of the second fiscal year. They were fighting the Germans and Italians in Africa, learning the business of battle on the beaches at Casablanca and Oran, on the docks at Algiers, on the thirsty hillsides of Morocco, Algeria, and Tunisia. They tested the tools of their new profession and found them good. Of only one thing could we be sure—that their demands would be for more . . . more . . .

Around the clock, day and night, week after week, month after month, industrial America labored to keep up with the endless, growing demand. Men were talking no longer of defense. That phase ended in the first year. These were not weapons of self-protection we were making. They were weapons of victory. We were shipping men and materials overseas in the longest supply lines in history and getting them where they were needed, on time.

That was the second year of ASF. Another year of impossible accomplishment. The slogan still stood. There had been some mistakes, of course. But against the background of successes, they were of small consequence. They were the cost of lessons learned in the hard schoolroom of war.

Then came the third year . . . the year of this report.

On the morning it started, the invasion of Normandy was 24 days old. We had stormed ashore in 4,000 ships, packed with men and with everything men need to fight on foreign soil. It was the mightiest fleet the world had ever seen. We had fought our way up the beaches, had established ourselves, and were pouring guns and ammunition, tanks and trucks, food and barbed wire and telephones and radio sets and hospitals on the continent, millions of tons. We had taken the battered and smoking port of Cherbourg and were making it ready for other millions.

In the south, our armies were marching up the road from Rome to Florence and on this morning of 1 July 1944, were battering the German rearguard, 20 miles south of Leghorn, with artillery fire which ate up more shells than ever had been used before in battle. The Axis

was beginning to crack. Italy already had dropped out of the war and was striving to become our "cobelligerent." The German generals back in Berlin and Munich, were trying to explain to Hitler that they had not been out-generaled, that their soldiers still were supermen . . . it was the astounding weight of American weapons and supplies which pushed them back. We were glad to provide the excuse.

In the Pacific, the Japanese had started the long, costly retreat which would end with the utter collapse of their nation as a military power. General MacArthur was driving up the coast of New Guinea, overwhelming strong-point after strong-point. New, unfamiliar names were in the news, names of far places in the Pacific where American soldiers, sailors and marines were carving history out of coral reefs. With each attack, the supply line stretched. Each beachhead meant more thousands of tons of equipment landed, still more thousands to keep filled the pipe lines of supply. Each required increased effort here in ASF.

On the day the new year started, General Stilwell announced that the town of Myitkyina at long last was in American hands and the Japanese had been driven from northern Burma. The Ledo road, hammered through the jungle and over the mountains, was pushing into enemy territory, allowing the British, our troops, and the Chinese who fought beside us, to carry the battle into Burma.

American industry and American workers, under the guidance of the ASF, had turned out the weapons, enough and on time. There was no longer any doubt of ultimate success. But the war was not yet won.

The Russian armies, after their heroic stand at Stalingrad, had taken up the attack but they still stood 20 miles short of the old Polish border. Buzz bombs still dropped on London, bringing death by day and night to that weary city. However, on 1 July 1944, our planes sought out and blasted launching platforms which the Nazis had set up for those bombs, along the Channel coast.

For 2 hard years the Army Service Forces had been performing the impossible. The American people had produced and the Army Service Forces had delivered weapons and supplies we had only wished for on 7 December 1941. Landing a million men and a hundred thousand vehicles through the surf of the Normandy beaches in 109 days stirred barely a ripple of comment at home. It was expected and accepted. Yet this landing and many others would have been impossible without the hundreds of amphibious vehicles and other devices which a few months earlier had been regarded more as a Jules Verne concept than a possibility.

In earlier landings a small weapon, given the bizarre name of bazooka, capable of being carried and fired from the shoulder of a single soldier had been used to stop and put out of action the great German tanks. These and many other impossibilities were helping turn the tide of battle in our favor.

The ASF had not fallen short of the second half of its pledge. It had performed its miracles. But not all miracles to talk about. In secrecy, scattered about the continent, ASF officers and the leading scientists of the world were experimenting, planning, building, preparing. Some results were appearing.

The Signal Corps, working on British beginnings, had made radar a weapon of war from a scientific curiosity. It was performing daily miracles behind the screen of censorship.

Our planes were equipped with this device in rapidly increasing numbers and its application both on land and sea for offense and defense gave deadliness to our attack and certainty to our defenses. Thanks to the magic eye of radar, able to penetrate night and fog, we had Miracle Number One. But it was a secret; no one dared talk about it.

Army doctors were performing their miracles. Penicillin already had proved itself and the ASF and Industry had commandeered enough labor and machinery and raw materials to turn out the new lifesaving drug in ever-growing quantity. Our doctors perfected its use and application; meanwhile in Italy they were halting plagues with another new drug called DDT, a magic powder which destroyed vermin and insects, with little danger to man. Operating in tents behind the battlefield and in the hospitals at home, they daily did their miracles in surgery and medicine.

Other miracles came to pass in this year, miracles of the Ordnance Department. Long a dream of artillerymen was a shell which would burst of itself when at the optimum distance from the target, burst without man-made errors in estimating distances and altitudes in fuse setting. Such self-operating shells came into being with the "VT fuse" and were hurled with deadly effect against the enemy. Another Ordnance miracle was a recoilless cannon of unbelievably light weight and precision, completed and rushed into battle in time to assist in the destruction of the enemy's forces. Until seen, these weapons could not be accepted by soldiers accustomed to the age-old heavy cannon with the elaborate mechanisms to absorb recoil.

Though it probably should be classified as impossible rather than miraculous, the mobile 36-inch mortar, firing a shell weighing nearly 2 tons and designed for use against the Japanese citadel, was completed, tested, and ready for shipment before the year-end.

Infrared rays for seeing in the dark were used in a new device in the latter stages of the battle. The Army Communications network, with telephone and teletype, telegraph and radio tied together the cities of the world, linking all the continents and all our secret outposts in Greenland and on the Gold Coast and in the Chinese hinterland. This truly was a miracle of science and ingenuity and organization and the will-to-succeed. Wherever American soldiers worked or fought, all around the world, they were only a telephone call or a radio wave away from headquarters in Washington.

Landing mats, those prefabricated airfields built on the assembly lines of American industry and assembled practically overnight in jungles, on deserts, along the beaches where no plane had ever come to earth before, were miracles in their own way, and gave strength to our soldiers wherever they were spread.

Early in the war the ASF had set up its most secret of secret projects. It was dubbed, disarmingly, "the Manhattan Engineer District." With 2 billion dollars, 125,000 workers, with all the resources of American science, British aid, our university and industrial laboratories, the Army Engineers began the production of atomic bombs.

The job was so immense, the problems to be solved were so unprecedented, the gamble and the risk were so breath-taking, the miracle is that results were ever secured . . . and in secrecy. Our enemies were in the race. Only the winner could survive. Thanks to everyone connected with the work, from General Groves who was in charge of the project, his scientist associates, the Air Forces, the Navy, industry and other cooperating agencies, down to the humblest workman, we won the race.

As the fiscal year ended, the word came out of the laboratories and workshops that the first of the new bombs had been finished. It was tested shortly thereafter with as much secrecy as can surround anything which lights up the horizon for 250 miles. We were ready at last.

The war ended in a flash of atomic energy 1 month and 14 days after the end of the fiscal year.

The miracle that produced all the other miracles was something even more American than any one of them. It was the organization and vitalizing of this vast machine. It was the miracle of management.

It was the business of marshalling into one cohesive group the knowledge, power and determination which made it possible to mobilize and direct the almost limitless capacity of this nation to serve the needs of the combat elements of the Army. It was the creation of a will and power that brooked no interference and was undaunted by any obstacle, to create and supply the weapons of victory, to furnish the necessary services for those who swept our enemies from the field.

The ASF came into being, it began to function, felt its way, put on speed and power, produced the goods and delivered the goods around the world, 2 billion dollars worth a month. It procured more varieties of equipment and supplies than any other single organization ever has attempted to gather together. Its lists covered nearly a million separate items. It kept count of these items, stored them, held them in reserve, shipped them where needed, constantly reduced complicated procedures, saved time and dollars and pieces of paper and ton-miles and man-hours and overhead. It took the best out of business and put it into the business of war.

The business of Army Service Forces falls naturally into two broad categories. There is the technical business of designing, producing, storing, transporting *things* . . . weapons and equipment and supplies. Then there is the business of handling people, keeping their records, paying them, solving their personal problems, encouraging them to be enthusiastic about their jobs, teaching them, entertaining them, keeping them informed.

The two overlap all along the line. But for the purpose of business management the Army classifies each division or service under its principal functions either as a technical or an administrative service. Thus there are seven technical services in ASF: Quartermaster, Ordnance, Engineers, Medical, Signal Corps, Chemical Warfare, and Transportation. Of these, only Transportation is new, organized as part of the Army Service Forces after we entered the war. The others all had been separate agencies and some of them have histories extending back more than 100 years.

The administrative services, functioning usually as staff divisions in the Headquarters of ASF, include the office of The Adjutant General, The Judge Advocate General, The Provost Marshal General, Finance, Special Services and Information and Education Divisions, and Chaplains.

This report makes no attempt to outline the intricate organization of each of them separately. Rather it will indicate their functions and the results attained.

The ASF in the fiscal year paid out \$54,400,000,000. The whole operation required the services of a total estimated at about 8,000,000 men and women in the Army or engaged in Army work.

Improvisation has marked the work of the Army in the field and behind the lines throughout the war. On the broadest scale, the American nation improvised a mighty army out of civilian soldiers, with civilian industry, transportation and civilian scientists. The individual soldier learned early to improvise and wherever he fought or worked he found new uses for old tools, invented new tools, made what was at hand do what needed to be done.

Improvisation is but another word to indicate the resourcefulness, adaptability, industry and intelligence of man determined to make the most of any situation. Improvisation has saved the day on many an occasion. The real fruits of our efforts, however, were attained only by the most careful planning and preparation and by the most detailed and meticulous execution of these plans.

Chapter 1. THE ATOMIC BOMB

For reasons of national security, and because of the compelling necessity for absolute secrecy, no previous annual report of the Army Service Forces has been able to make mention of any of the work or any of the accomplishments resulting in the successful production and use of the atomic bomb, despite the fact that the War Department and the Army Service Forces became directly concerned with the development of this greatest weapon of all time in the early summer of 1942.

The veil of secrecy was not lifted until after the first atomic bomb was dropped on Japan on 6 August 1945, more than a month after the end of the period covered by this report, the fiscal year ending 30 June 1945. As this report is written at a later date, however, after Hiroshima and Nagasaki, and after the publication, in the Smyth Report, on 11 August 1945, of all pertinent scientific information which could properly be released to the public, it is fitting and advantageous to include in this chapter a general account of these accomplishments during the whole 3 years from August 1942 to August 1945. National security still prohibits full disclosure of the entire story to the general public; therefore, as this report is intended as a public document, some developments must still be omitted.

The miracle of the atomic bomb was wrought by the most unique combination of fundamental scientific research, of technical development both in and out of the laboratory, of mass production, and of management ever achieved in the history of American enterprise. It was a miracle not only in the immensity of the concrete results attained, but also in the complete secrecy and the unparalleled speed with which every coordinated part of the project was carried to its successful conclusion. In a strategic race against time, a generation of national effort was, in effect, compressed into a period of barely 5 years.

By June 1940, when the national defense effort of the United States began, scientists in the field of nuclear physics throughout the world had recognized something of the vast significance of the theory of the equivalence of mass and energy; they had accumulated considerable ideas as to nuclear reactions; they had discovered the phenomenon of fission—particularly uranium fission—and had discussed its major implications: the release of energy, the production of radioactive atomic species and the possibility of a neutron chain reaction; they had demonstrated the fundamental principles upon which further development was to be based. They knew that the neutrons initiating fission of uranium reproduced themselves in the process and that a multiplying chain reaction *might* occur with explosive force. This was the possibility on which the entire project for the military use of energy from atomic nuclei hinged at that time. A vast amount of fundamental research and technical development still remained to be performed.

American scientists voluntarily took steps to prevent publication of further data about uranium fission in April 1940. Then, in June 1940, the Uranium Committee (which had been appointed by the President in 1939 and was known as the "Advisory Committee on Uranium") was reconstituted under the newly created National Defense Research Committee. Research and development proceeded under the auspices of the NDRC until November 1941, when decision was made to transfer the uranium program to the Office of Scientific Research and Development to be administered directly through an OSRD S-1 section (replaced, later, by an OSRD S-1 Executive Committee). On 6 December 1941, the day before Pearl Harbor, at a meeting of the S-1 section of OSRD, Dr. James Bryant Conant, speaking for Dr. Vannevar Bush, Director of the OSRD, announced the reorganization of the section and the decision to concentrate all efforts on the development of the atomic bomb for military use. The reorganization, in effect, placed the direction of the research and development work in the hands of a small group consisting of Dr. Bush and Dr. Conant and Drs. L. J. Briggs, A. H. Compton, H. C. Urey, E. O. Lawrence, and E. V. Murphree. A Top Policy Group, consisting of the Vice President, the Secretary of War, the Chief of Staff, and Drs. Bush and Conant, approved the reorganization plans and received the recommendation of the Director of OSRD that the Army should take over when full-scale construction was started.

The S-1 Executive Committee of the OSRD, with Dr. Conant as chairman, replaced the S-1 section in May 1942, and the primary function of this committee was to make recommendations as to policies and actions in carrying out the project. The recommendations of this committee were usually followed.

On 17 June 1942, a formal report on the atomic bomb project was sent by the Director of the OSRD to the President. This report, dated 13 June 1942, had previously been submitted by Drs. Bush and Conant to the three other members of the Top Policy Group and had been approved by all of them. It contained comments by Drs. Bush and Conant and by General W. D. Styer, Chief of Staff of the Army Service Forces, who had previously been appointed as Army representative in connection with the determination of plans and policies for the project. This report summarized the status of the program and concluded: that a number of kilograms of U-235, an isotope of uranium, or of plutonium, a new element, would be explosive; that such an explosion would be equivalent to several thousand tons of TNT; and that such an explosion could be caused to occur at the desired instant. The report stated further: that the desired explosive or fissionable material might be produced by any one of four different methods; that no one of these could be identified as superior to the others; that production plants of considerable size could be designed and built; and that with adequate funds full-scale plant operation could be started soon enough to be of military importance. Dr. Bush, Dr. Conant, and General Styer had reviewed the recommendations of the program chiefs, Drs. Lawrence, Urey, Compton, and Murphree, and their comments presented the following conclusions and recommendations: that, in view of known research by the enemy, and in view of the pioneering nature of the whole effort, it would be unsafe to concentrate on only one means of obtaining the desired

result; that it would be best to proceed at once on those phases of the program which would interfere least with other important war activities; and that work on other phases could proceed as questions of interference were resolved. The report was approved by the President, and the time had now come for the taking over by the Army, as recommended in 1941.

The Chief of Engineers, ASF, officially established on 13 August, 1942, a special District to carry out all phases of the project. This District was later given the anomalous title, Manhattan District, and its work was labeled (meaninglessly, for security reasons) the "DSM Project" (Development of Substitute Materials). In September 1942, Major General Leslie R. Groves, at that time Deputy Chief of the Construction Division, Office of the Chief of Engineers, was placed in charge of the project for the Army. That same month a conference was held of those designated by the President to determine the general policies of the project, and certain others. Those present were: the Secretary of War; the Chief of Staff; Dr. Bush; Dr. Conant; the Commanding General, Army Service Forces and his Chief of Staff; and General Groves. (The Vice President was unable to attend.) A Military Policy Committee was appointed, consisting of Dr. Bush as Chairman with Dr. Conant as his alternate, General Styer and Rear Admiral W. R. Purnell. General Groves was named to sit with this Committee and act as Executive Officer to carry out the policies that were determined. The duties of this committee were to plan military policies relating to materials, research and development, production, strategy and tactics, and to submit progress reports to the policy group designated by the President. All incomplete development contracts of the OSRD were taken over by the Manhattan District on 1 May 1943.

General Groves was relieved of all other duties in the Corps of Engineers and the Army Service Forces and instructed to devote his entire time and energy to this project. At the same time, the Commanding General of the ASF placed at the Manhattan District's disposal, through the personal efforts and attention of General Styer (his Chief of Staff and also a member of the Military Policy Committee), all the facilities of the Army Service Forces which could be of assistance in carrying out the project. One of the distinctive features of the Manhattan District and its work was the very limited organization under which it operated, since it took full advantage of all available Government agencies, particularly those in the ASF. For example, on medical or health problems, of The Surgeon General's Office; on communications, of the Signal Corps; on transportation, of the Transportation Corps; and on real estate acquisition, materials, labor relations, safety, etc., of the appropriate Divisions of the Office of the Chief of Engineers, ASF.

The work of the Manhattan District may be divided into four major classifications, each of which could be divided into a multiplicity of subclassifications. This chapter will be confined, in brief, broad outline, to description, within the limits of security restrictions, of the major classifications only: first, the further research and development work; second, the construction and operation of plants for the full-scale production of explosive or fissionable materials; third, the design, construction, test and use of the atomic bomb itself; and

fourth (a classification which influenced and permeated all the work of all the other classifications), the maintenance of security and absolutely secrecy in all phases and all details of the work.

There was much fundamental research to be done. At the University of California, Columbia University, the University of Chicago, and a number of other universities, intensive experimental and theoretical work was carried out, particularly on the problems of procurement of materials, isotope separation, and chain reaction. This work was expected to provide the data for the production of material for use in a fast-neutron chain-reacting bomb, using one or another of the various methods which were being developed simultaneously.

One of the four methods which was originally reported as promising, the centrifugal method of separation of uranium isotopes, was developed at the University of Virginia, and a pilot plant was built and operated at Bayway, New Jersey. Because of the magnitude of the engineering problems involved in full-scale production by this method, however, no full-scale plant was attempted and work on the centrifugal method was finally discontinued. Thus, of the four original methods, only three were actually placed in operation. (Later another, supplementary, method was operated.)

Major problems of research and development included the production of uranium metal and the procurement (for the chain-reacting pile) of a satisfactory moderator, in sufficient quantities and of sufficient purity to meet the requirements of the project. By the end of 1942, both of these problems had been solved, and further progress toward the ultimate objective had been attained by the production, for the first time in history, of an extremely small but self-sustaining chain reaction, under experimental conditions, on 2 December 1942, at Chicago. Construction of pilot scale chain reacting piles started soon thereafter, with research and development work still continuing.

The work by the Columbia University Laboratories for research on U-235 separation from uranium by the gaseous diffusion method, begun in 1940, was moved to a separate building in 1943. By the end of the previous year the problems of large-scale separation of uranium by this method had been well defined. These problems included principally the development of satisfactory barriers and pumps, as well as many other problems of instrumentation and control. All were ultimately solved, and construction of a full-scale plant began on 1 June 1943, while development work still continued.

Research on the electromagnetic separation of uranium isotopes was conducted by the Radiation Laboratory at the University of California. Of three possible and promising electromagnetic methods which were first studied, the so-called "calutron" mass separator became the center of concentrated effort. The principal problems involved, including the ion source, accelerating system, divergence of the ion beam, space charge and utilization of the magnetic field, had reached a sufficiently advanced stage to permit construction of the initial units of a full-scale plant to begin in March of 1943, with research and development work, as usual, still continuing. To supplement the electromagnetic plant there was built later, in the summer of 1944, a thermal diffusion plant.

A supplementary part of the research work, and one which was of vital importance to the whole project, concerned the provision of certain protection against any health hazards which might be encountered during operations. The workers were protected completely as a result of the efforts of a special health group organized to conduct medical research. The success of this part of the research work is amply attested by the excellent health record of the employees engaged on the work. (This record should not be confused with the safety record, which has also been remarkably high, for both the construction and the operating personnel.)

Another part of the research work concerned the development of methods of quantity production of heavy water, which it was thought might be needed as a moderator. This work was carried on by the Columbia University Laboratories, by the Standard Oil Development Company and by the duPont Company, with assistance from Princeton University. Construction of plants for production by the fractional distillation method was started by the duPont Company in January 1943 and they were placed in successful operation about January 1944. A plant for production by the hydrogen-water exchange reaction method was installed at the works of the Consolidated Mining & Smelting Co., at Trail, British Columbia, Canada. Construction started in September 1942, and operation began in June 1943.

The second of the major classifications of the work of the Manhattan District, which have been enumerated above, was the construction and operation of plants for full-scale production of the fissionable materials. A unique and unparalleled feature of the work in this category, which sets the atomic bomb project apart from all previous scientific-production projects with which it is possible to make comparison, was that the full-scale production plants had to be constructed without the benefit of any true pilot plants. Indeed, as has been already noted, construction at full scale had to begin even before the usual laboratory work could be completed, with, in some cases, experimental data available on the minutest of scales only. Such were the calculated risks which had to be taken in this race against time. One need only recall the repeated promises of new secret weapons to come, which Hitler made to the German armies and the German people, periodically almost up to his final collapse, to realize how great was the apparent need for the utmost possible speed.

A small-scale plant for experimental plutonium production was built, it is true, as we shall see later, but before it could be operated, the full-scale plutonium production plant was under construction; the small-scale plant served a useful purpose as an experimental enterprise and as a source of a few grams of plutonium needed for experimental purposes, but it was not a true pilot plant.

For the full-scale production plants the Manhattan District developed two great sites: the Clinton Engineer Works site, in the Tennessee Valley near Knoxville, Tennessee, and the Hanford Engineer Works site on the Columbia River, near Pasco, Washington.

When the Manhattan District was first established in 1942, the Clinton site in Tennessee was selected. After preliminary examination by engineer officers and representatives of Stone and Webster Engineering Corporation, it was personally examined and approved by General Groves; acquisition was authorized and started in September



Clinton Engineer Works



Clinton Engineer Works

ber 1942. An area of about 70 square miles, later increased to about 92 square miles, was acquired, on the Clinch River about 20 miles from Knoxville. The topography, the small population, the low land values, and the availability of large amounts of power were determining factors in this site selection.

On this site, in three valleys, there were erected the small-scale experimental plant for plutonium production, previously mentioned, and three of the full-scale production plants: the electromagnetic separation plant, the gaseous-diffusion separation plant and, finally, the moderately small thermal-diffusion plant which supplements the electromagnetic plant.

Here also there grew up the community of Oak Ridge, a city with a population at one time of approximately 75,000 inhabitants—construction and operating personnel and many of their families. This part of the project alone constituted a major achievement, including as it did the construction, operation and maintenance of dormitories, houses, cafeterias, laundries, schools, churches, stores, theaters, hospital, etc., and streets and roads, water supply, sewerage system, electrical system, communications, bus transportation, railroad, etc.

The construction of these facilities proceeded in large part simultaneously with the construction of the plants and extended into the period of operation also. The problem of concealing the nature of the whole enterprise throughout the entire period of construction and operation, added to the large capacities required to accommodate all the construction and operating personnel, and the limited time available, rendered this part of the project particularly unusual and difficult, despite the fact that the construction itself was simple and as temporary as possible. At the peak there were about 80,000 employees and these were recruited by numerous Government agencies throughout the United States. There were about 5,000 trailers; 9,600 houses; 90 dormitories, housing about 13,000 persons; there are 58 miles of railroad track and 180 miles of streets and roads; 12.5 million gallons of water are filtered per day (to serve the community and one of the plants as well); 5.5 million gallons per day of sewerage is the rated capacity of two treatment plants (to serve likewise one of the plants as well as the community); there are 130 miles of collecting mains, with nearly 8,000 service connections. 500 buses are operated in the transportation system both in and off the Area. About 5,500 trips per day were operated inside the area, traveling sufficient mileage to encircle the world every 24 hours; off-area operations extend 80 miles from the project, with about 50 bus routes covering 1,200 trips daily, of an aggregate length exceeding 50,000 miles per day.

The photographs accompanying this chapter give a general idea of the nature and size of the production plants (not identifiable at this time) and show both general and detailed views of many of the community facilities.

Construction of the production plant for the electromagnetic separation of uranium was authorized on 5 November 1942, and was carried out by Stone and Webster Engineering Company. The General Electric Company was responsible for much of the electrical equipment and controls; the Westinghouse Electric and Manufacturing Company for the mechanical parts: sources, receivers, pumps, tanks,

etc.; and the Allis-Chalmers Company, for the magnets. The Tennessee Eastman Company was engaged to operate the plant. Construction of the first units began in March 1943, and they were ready for operation in November 1943.

All five of the industrial concerns named above kept groups of their engineers at the Radiation Laboratory of the University of California at Berkeley, where the research and development work was being continued, so that a system of frequent conference and cross-checking was established. A section of the plant at Clinton was operated jointly by the research group and the Tennessee Eastman Company, as a pilot unit for testing modified equipment and revised operating procedures. The Radiation Laboratory reports described as many as 71 different types of source and 115 different types of receiver, of which all reached the design stage and most were constructed and tested.

For nearly a year the electromagnetic plant was the only one in operation and consequently the urge to increase its production rate was tremendous. This led to the construction of the supplementary thermal diffusion plant, which was based on the results of work at the Naval Research Laboratory and the Philadelphia Navy Yard on pilot plants for uranium separation by that method. These results, together with the services of the leading scientist in this field, Dr. P. H. Abelson, and the plans for a large-scale plant, were made available by the Navy Department, and this plant was erected in an amazingly short time during the summer of 1944. This plant enriches the feed to the electromagnetic plant and increases the production rate appreciably.

Meanwhile, the construction of the plant for separation of uranium by gaseous diffusion had been undertaken. Early in 1942, the M. W. Kellogg Company was called upon to develop plans for this plant, and its subsidiary, the Kellex Corporation, carried out both the planning work and the procurement of materials. The plant was constructed by the J. A. Jones Construction Corporation of Charlotte, North Carolina. In January 1943, the same month during which construction was authorized, Carbide and Carbon Chemicals Corporation was chosen as operators of the completed plant, and their engineers played a large role not only in the planning and construction but also in the research work which was carried on by the Columbia University laboratories.

The site for the Hanford Engineer works was selected after the conclusion was reached, at the end of 1942, that the Clinton site was not sufficiently isolated for a large-scale plutonium production plant. At this time there was an almost complete lack of knowledge of the safety requirements for such a plant, so that an area of more than safe dimensions had to be provided. Isolation, power, water supply, and low land value were the major requirements, and the Hanford site, with an area of about 670 square miles fulfilling these requirements, was finally acquired, or controlled, after personal examination and approval by General Groves.

In addition to the large-scale plutonium production plant there was built on the Hanford site another community, not so large as that at Oak Ridge, Tennessee, but similar in character and similar in the complexity of its problems. The construction camp reached a peak of 41,000 inhabitants. The village of Richland, which accommodates



Hanford Engineer Works



Hanford Engineer Works

the operating personnel, had a population of about 17,000 persons. There were 1,800 houses and 25 dormitories, the latter housing a total of 3,500 persons; the present employment is 5,100 and at the peak of construction it was about 50,000; there are 158 miles of railroads and 238 miles of streets and roads; the village sewage treatment plant had a capacity of 1 million gallons per day; the peak demand for electric power was estimated at 170,000 kva; there was a total rated steam capacity of 1,500,000 pounds per hour.

E. I. duPont de Nemours and Company was asked by General Groves, on behalf of the War Department, to undertake the construction and operation of the large-scale plutonium production plant at Hanford, as the firm best qualified to carry on this phase of the work. With some reluctance, because they were already heavily engaged in war work and because of the unknown character of the field they were asked to enter, the duPont Company accepted. The company specified that the work should be conducted without profit and without any patent rights accruing to it. All work was done on a cost-plus-a-fixed-fee basis, with a fixed fee of \$1.00 for the company.

Construction of the Hanford construction camp started on 6 April 1943, and work on the first of the production piles began 7 June 1943. Operation of the first pile began in September 1944. The plant as a whole includes three piles, plutonium separation plants, pumping stations, and water-treatment plants. There is also a low power chain-reacting pile for material testing. Not only are the piles themselves widely spaced for safety—several miles apart—but the separation plants are well away from the piles and from each other. All three piles were in operation by the summer of 1945 and full scale production of plutonium for atomic bombs was under way.

The third major classification of the work of the Manhattan District—toward which all the efforts heretofore described were merely preparatory—covered the design, construction, test, and use of the atomic bomb itself. The design and construction of the bomb were carried out at another site which was acquired by the War Department, on a mesa about 45 miles from Santa Fe, New Mexico, where the Los Alamos Laboratory was constructed. The first and only test of the bomb was conducted at the Alamogordo Air Base in central New Mexico on 16 July 1945. The military use of the bomb, as all the world knows, took place first at Hiroshima on 6 August 1945 and then at Nagasaki on 9 August 1945.

The major requirements of the Los Alamos site were secrecy and safety. Initially the only structures on the site consisted of a handful of buildings which had constituted a small boarding school. The laboratory, financed by the Government and operated under the auspices of the University of California, with the Director Dr. J. R. Oppenheimer, in charge, had to be built in its entirety; laboratory buildings, library, shops, power plants, and a whole community to accommodate the scientists and all the other personnel had to be erected; but the greatest task of all was the assembly and installation of the necessary apparatus, machines, and equipment. Three carloads of apparatus from Princeton University filled some of the most urgent requirements; other equipment was obtained from university laboratories in various parts of the country—from Harvard, Wisconsin, Illinois, and others. Adding to the complexity of this task were the

isolation of the site and the difficulty of access, the necessity for the utmost speed and the necessity for preservation of absolute secrecy as to the purpose of the whole project. The result attained, despite all difficulties, was that the Los Alamos Laboratory was probably the best-equipped physics research laboratory in the world today.

Seven divisions were established in the laboratory organization, all under the leadership of Dr. Oppenheimer. One of these, Ordnance, was headed by a Navy officer, Captain W. S. Parsons, and the others by civilian scientists. The achievements of the laboratory included improvement of the theoretical treatment of design and performance problems, refinement and extension of the measurements of the nuclear constants involved, development of methods of purifying the materials used, and, finally the design and construction of operable atomic bombs.

The dramatic story of the test at the Alamogordo Air Base, has been published, so far as security will permit, in many newspapers, and requires no repetition here. Suffice it to say that the success of the test exceeded the expectations of any of those the results of whose efforts it demonstrated.

Nor is it necessary to describe in this report the final acts of the dropping of the bombs by the Army Air Forces on the enemy territory of Japan. The missions were carried out efficiently—and successfully beyond all imagination. The miracle, which started with a mere hope in 1940, had become a fact—and it brought with it the surrender of Japan.

The fourth and final major classification of the work of the Manhattan District—the maintenance of security and secrecy in all phases and all details of the project as a whole—does not necessarily belong in last place chronologically, but it does deserve emphatic mention here; without this part of the work all other parts might have been rendered worse than useless. It is easy to conceive of the disastrous consequences which leakage of valuable information to the enemy might have brought to this nation and all our allies. As previously stated, security requirements influenced and permeated all the other classifications; they contributed inevitably toward increased cost: of construction, of operation, of administration—of just about every item of the project. Security had to be preserved at all costs, and it was. It involved for the most part organizational and administrative methods, but above all it required the loyal cooperation of the hundreds of thousands of persons who had a share in the work.

The description of the Atomic Bomb Project given in this chapter, fragmentary as it necessarily must be, can convey only an inadequate idea of the magnitude of the undertaking as a whole. Even the total overall cost, for which the roughly approximate newspaper figure of 2 billion dollars may be cited, cannot be regarded as an adequate measure. The total cost of the project was, however, useful for another purpose: to prove, by comparison with the total cost of the war, how completely the financial risks which were involved were justified. This proof is perhaps even more impressively emphasized by comparing the total cost of the project with the *increase* in the total cost of the war—even in dollars alone—which would have been caused by its prolongation, had it not been for the atomic bomb. There can be no question but that the attainment of the surrender of Japan justified the cost many times over. The calculated risks which were taken in the beginning proved to have been correctly calculated.

Chapter 2. OVERSEA SUPPLY

The major business of the Army Service Forces in the fiscal year 1945—and its chief worry—was the supply of American forces overseas. With Army strength overseas reaching its peak, with the enemy at last feeling the full force of American power in Europe and in the Pacific, the supply of these forces was a bigger job than ever before. Ports of embarkation shipped 56 million measurement tons of cargo overseas,* compared with 39 million measurement tons in the preceding year. Depots in the United States shipped 17.7 million short tons of supplies to ports for oversea loading in 1945, compared with 13.5 million tons in 1944. And several million tons moved directly from manufacturing plants to ports without ever going through Army warehouses. In every respect, 1945 was a peak year in oversea supply.

To be sure, the shipment of needed equipment, food, ammunition, gasoline and oil, spare parts, and other supplies was not the only concern of the Army Service Forces. There were many other jobs to do likewise—all with their aspect of assisting oversea commanders to do their part in defeating the enemy. There were troops to be organized and trained to handle supplies and maintenance overseas, there were new weapons to demonstrate, there were entertainment films and entertainers to be sent overseas, there were patients to be brought back from overseas and cared for in this country, there were radio and cable messages to exchange—these and all the many other services described in this report were a part of the job of the Army Service Forces in helping the troops overseas. The problems of each area where American soldiers worked and fought were close to the ASF at all times.

The system of oversea supply had been built up in preceding years. It proved capable of handling the load when fighting in one part of the world reached its climax, and fighting in another part reached new intensity. In general, the supply problem had several different aspects. It was never simple, and never subject to easy generalization. For one thing, there were the consumable supplies—food, gasoline and oil, and ammunition. The quantities of the first depended upon the number of soldiers and others being fed. The demand for gasoline was determined by the number of vehicles in operation, and the distances traversed. Ammunition supply varied with the kind of active warfare and its duration on the fighting fronts. Medical supplies also fluctuated with partient load. A second major problem was replacement of the equipment overseas. Weapons were lost in combat or destroyed. Clothing wore out. Vehicles had to have new parts. There were new weapons and other equip-

*A measurement ton is 40 cubic feet of space occupied by cargo. On the average one measurement ton equaled 2.4 short tons.

ment to replace obsolete items or to meet new conditions. Hundreds of thousands of pieces of equipment and spare parts had to be provided continuously. And in the third place, there were special types of supplies which were required by the peculiar conditions of each area overseas. Construction materials and equipment were necessary on the scale required to build port facilities, oversea warehouses, troop quarters, airfields, communications lines, roads and railways, and pipe lines. Railway equipment, boats, or trucks were needed, depending upon the principal means of transportation and the distances to be covered. There were unloading facilities—heavy cranes, barges, and other equipment, depending upon the condition of oversea ports.

All these varied needs had to be anticipated and met. For the most part, supplies flowed overseas from ports in regular, periodic convoys. Requisitions from overseas were filled by depots in the United States, desired items were shipped to the ports as scheduled, cargo vessels were loaded, convoys formed and sailed. This was the process. And interspersed were last minute rush demands to be met, critical shortages of some items which delayed delivery or reduced quantities below the desired amounts, and supplies which the ASF in its advance planning believed the oversea theater would need.

In the fiscal year 1945 the Army Service Forces received some 750 projects from oversea listing materials and equipment which would be needed to build up bases or in forthcoming amphibious operations. These were reviewed, procurement programs based upon the needs, and requisitioning instructions returned to the theater overseas. In addition, five operational projects were developed in detail within the Army Service Forces for eventual execution overseas. Procurement for three of these was underway at the end of the fiscal year. To illustrate the type of equipment met by these demands, the Army Service Forces in the past year shipped overseas 2,500 miles of 4-inch pipe line and 4,000 miles of 6-inch pipe line for oil and gasoline distribution. The necessary pumping stations were also shipped, as well as materials to construct storage facilities capable of handling 6 million barrels of gasoline and oil.

The work of the Army Service Forces in 1945, can perhaps best be understood by reviewing briefly the supply problems of particular oversea theaters.

The European Theater of Operations •

Before 6 June 1944, invasion supplies and equipment had been accumulated in the United Kingdom. For the first several weeks after the assault upon the Normandy beaches, men and cargo moved across the Channel into France. Ships sent from the United States but held unloaded at British ports were a part of this traffic. There was a lull in shipping from the United States until the beaches were prepared to handle greater quantities. By the middle of July, the European Theater was looking to the United States for its principal supply support, while the quantities remaining in England were brought over as opportunity permitted.

The troop units for reinforcing the initial assault upon the Germans were also moved directly from the United States. Original plans contemplated that these troops would have their equipment shipped in advance. This had to be abandoned in favor of a plan for complete

equipment in the United States and the movement of men and equipment in a single convoy from ports to Cherbourg or the Normandy beaches. Then with the rapid advance across France in August 1944, General Eisenhower asked that troop movements be speeded up in order to make the most of the existing favorable situation.

Teams of supply officers helped all troop units in getting their complete equipment together and packed for overseas shipment. Units received their final equipment at home stations and were embarked within 90 days of their initial movement order. Altogether 700,000 troops with complete equipment were moved to the continent under the so-called Red List procedure, including 20 infantry, 8 armored, and one airborne divisions. More than 5 million measurement tons of initial equipment went with them. In 1 month alone, the ASF carried 11 divisions and a total of 226,000 men to Europe.

In the 1 year ending 30 June 1945, the Army Service Forces moved more than twice as many men to Europe as were in the United Kingdom on D-day, and shipped almost three times as many tons of supplies as were landed in England from January 1942, to June, 1944.

The lack of adequate port facilities to support the rapidly moving armies became a major difficulty in the European operations. Although captured on 27 June 1944, Cherbourg required extensive reconstruction and did not reach peak discharge until November. Antwerp was captured intact in September and the first ships began to unload there in November. This port filled a real need, but its full use did not become possible until 6 months after the invasion. In the meantime, almost two-thirds of the supplies for the armies in France were unloaded over "Omaha" and "Utah" beaches, the original assault areas.

The unloading conditions had two results. Since the Normandy Peninsula continued to be the supply inlet, long transportation lines were required to move supplies to the troops as they marched to the German border. The well-known "Red Ball" truck service was the answer until rail operations could be increased. But highway trucking meant greater demands upon the United States for heavy trucks, spare parts, and road maintenance supplies. The job of railway restoration was a major undertaking. About 60 percent of French rolling stock had been destroyed. In a single marshalling yard were 1,300 charred locomotives and freight cars. All important railway bridges in northern France had to be rebuilt. Yet French railways operated by the Army were hauling 11,200 short tons a day by October, and had moved over 6.6 million tons out of ports by VE-day. But while internal transportation was being arranged, ships awaiting unloading jammed up. There were inadequate storage facilities near ports or between the ports and the front lines until January 1945. Many improvisations were necessary to continue support of the combat armies.

Then the Ardennes counteroffensive launched on 16 December 1944 put a new load on supply activities in Europe and back in the United States. The replacement of battle losses was a big job. Within a 6 weeks period the American Army lost 4,000 .30 caliber machine guns, 70,000 bayonets, 24,000 rocket launchers, 10,000 rifles, 2,600 two and a half-ton trucks, 684 medium tanks, 6 complete hospitals, 21,000 radio sets, 11,000 telephones, and 280 large guns, among other items.

All of these were replaced from the United States. Four major rush shipments reached Europe within an average of 54 days from the original telephone report of losses. Delivery time on supplies requested by cable was about 75 days.

At the beginning of February, a rapid express service was inaugurated for the shipment of selected critical items of high priority. Equipment was rushed from production lines direct to embarkation points and shipped overseas on fast cargo vessels. The letters "REX" were stamped together with a red arrow on the packages and the shipping papers for these items. Port officials followed closely every stage in the movement of these supplies to the port. The cargo was then carefully stowed in such a way that it could be quickly unloaded at its destination. Ship security officers were given instructions to assist in identifying and unloading packages at oversea ports. The European Theater was informed in advance the location of all REX cargo and upon arrival it was immediately unloaded and forwarded to the combat armies. Certain Ordnance, Medical, and Signal pieces of equipment were the items most frequently handled under REX shipments up to VE-day.

From D-day until the first of March, cargo vessels sailing from the United States were loaded almost entirely with a single type of supply, such as food, Ordnance equipment, Signal supplies, and ammunition. Upon arrival overseas these ships tended to become floating depots with complete discharge delayed until there was a demand from front line troops for all of the cargo. On 28 February 1945, this practice of commodity loading was discontinued since it was essential to obtain more efficient utilization of cargo vessels. The ASF continued to ship desired classes of supplies to the particular destinations designated by the theater, but filler cargo of spare parts, clothing and equipage items, and small arms ammunition were mixed with other cargo to obtain more complete utilization of the space and weight capacity of all vessels.

As was expected, there were last-minute supply demands from time to time which had to be met. On 16 August 1944, there was a request for the shipment of an experimental piece of secret equipment which had never been used in actual warfare. By the use of air transport from various depots and developmental laboratories, the equipment was assembled at Newark, rushed by special trucks to LaGuardia Field, and dispatched by air to the continent on the morning of 21 August. The equipment weighed nearly 6½ tons. On 5 October, there was a request for immediate shipment of 704 4- and 5-ton truck tractors, 1,306 10-ton semitrailers, and over 300,000 filled 5-gallon gasoline cans. Three weeks later seven ships were on their way carrying the requested cargo.

On 1 February 1945, the Army Service Forces received a request from the European Theater for 669 storm boats to be used in the crossing of the Rhine River. They had to be in the theater by 15 March, for use in the operation. At this time the Corps of Engineers had two contracts in effect for the production of storm boats with a scheduled delivery of 200 during the month of February. The existing inventory in the United States had already been exhausted in response to a previous request. Contracts with two new manufacturers were placed by telephone. Plywood was diverted from other

users and the materials were flown by the Air Transport Command to the manufacturing plant. Specifications were modified to permit the use of every available material. A highway in front of one of the plants was blocked off from all traffic and used as an assembly area. By the end of the month 650 storm boats had been produced and 19 damaged boats in depots had been repaired. Railway express cars moved the shipment promptly to the New York Port. Some 400 assault boats were dispatched on fast ships. The remaining boats were crated in nests of 6 and flown overseas. All were on hand for use in the crossing of the Rhine on 23 March.

On 10 February 1945, a convoy was scheduled to sail from east coast ports carrying 950 trucks. Railway congestion because of bad weather throughout the northeast prevented delivery by rail. Four of the service commands were asked to use military personnel to organize truck convoys and move the trucks by road to the port in time for shipment. In spite of heavy snows and unfavorable road conditions, only eight of the trucks failed to make the scheduled shipping date to Europe.

The successful performance in combat early in February of the new heavy tank led the European Theater on 8 March 1945, to request shipment of the largest possible number. The entire production of this tank was allocated to the European Theater and delivery schedules were speeded up. The theater was informed that 240 tanks would be delivered by the middle of April. As of 11 April, 298 heavy tanks had either reached the theater or were en route on ships, with another 150 off the assembly line and on their way or actually at the port. By VE-day a total of 442 had been shipped, of which 132 were afloat. In order to make these shipments, special cargo vessels including a seatrain had to be used. A vital weapon in use against the German heavy tanks was the new M36 tank destroyer equipped with a 90-mm gun. Within 9 days after receipt of an urgent request for more tank destroyers, 191 were on their way to port and within 60 days 255 more were shipped from production. Various measures were taken to increase output as rapidly as possible and by the end of December 1944, nearly all tank destroyer units in the European Theater had been reequipped with this weapon.

Early in January 1945, the War Department advised overseas theaters of the availability of newly developed 57-mm and 75-mm recoilless rifles. Demonstration teams were sent overseas and as a result, urgent requests came in from the European Theater for large quantities of the rifles and ammunition. In order to fill these unexpected requests, the bottom of the barrel was scraped for every available weapon and the required quantities of ammunition. Many shipments were made by air followed by other shipments by water. In response to an additional urgent request in April, several 57-mm recoilless rifles were withdrawn from research and from the Infantry School in order to complete air shipment to the European Theater.

The enormous demands for assault and field wire made it necessary for the ASF to set up a percentage allocation plan for both types of wire from production. The bulk of the output went to the European Theater, but some production was retained for direct shipment to the Pacific. The same procedure was necessary for dry batteries. Otherwise, only the European Theater would have obtained any

supply. The loss of small radio sets by combat divisions was so great that for several months automatic shipment of the most frequently used sets was made without waiting for requisitions.

The supply of the American and French armies which landed in Southern France on 15 August 1944, was handled through Marseilles. Although extensively destroyed by the retreating Germans, the port was quickly placed into operation and proved adequate to meet all the demands for the Sixth Army Group operating at the southern end of the Allied line. This port discharged more than a million tons of cargo in April 1945, its peak operation.

As the armies advanced rapidly beyond the Rhine, many truck companies were withdrawn from depots and from ports in order to haul supplies across the river to the front lines. This reduced the capacity of the ports to clear cargoes being unloaded on the docks. As a result, one convoy leaving the second week in April was cut in half and steps were taken to reduce future convoys. An embargo on the shipment of combat vehicles was placed in effect in the middle of April. Additional items such as barbed wire, railroad ties, camouflage nets, pierced steel plank, structural steel and surfacing materials were placed on embargo in the third week of April. The shipment of ammunition began to be curtailed at the same time. On the first of May all shipments of supplies for the rearmament of the French was stopped. By VE-day there had already been a considerable reduction in shipping to Europe. The supply problem of the European Theater was suddenly converted from one of combat to one of preparing equipment for shipment to the Pacific or return to the United States.

Mediterranean Theater of Operations

At the beginning of the fiscal year plans had been completed for the amphibious attack upon the southern coast of France which occurred on 15 August. Nearly all of the supplies required for that operation were on hand. The troops were mounted in Italy, North Africa, and Corsica. By the first of November some 380,000 troops, 69,000 vehicles, and 342,720 short tons of general cargo had been landed over French beaches.

The port facilities at Marseilles began operation on 15 September, and by the end of the month over 20 berths were in operation. The entire southern part of France came under the command of General Eisenhower on 20 November. The Mediterranean Theater continued to provide some supplies, however, while North African bases were being closed out and while surplus supplies existed in the theater.

The port of Leghorn was the first major harbor on the west coast of Italy to fall in Allied hands after Naples was entered on 2 October 1943. Leghorn was captured on 19 July 1944. It had been severely wrecked by Allied bombing and German demolition. Although repair work was begun at once, ships were not able to berth until the end of August. By the end of September, the port was discharging around 8,400 short tons a day.

Early in 1945, the Mediterranean Theater moved a large number of British and Canadian forces from Italy to France. These units were embarked at Naples and Leghorn with both British and Amer-

ican facilities being used. The Military Railway Service in Italy, a joint American-British operation, had restored approximately 2,700 miles of railway service south of Bologna by the end of the war. Nearly every railway bridge had been rebuilt including about 100 large structures. Italian locomotives and freight cars which had been recovered and placed in service were supplemented by 364 American locomotives and some 680 railway cars. Highway operations were also on a large scale in Italy. An average 2,500 trucks a day were used to clear ports and to haul supplies over to the Fifth Army. This army operated an additional 1,000 to 1,500 cargo trucks a day. Nearly 60 percent of all supplies unloaded at Naples were moved forward by road transport while practically all of the supplies unloaded at Leghorn were thus dispatched to the troops.

The Bizerte and Casablanca areas in North Africa were cleared of American operations by December 1944, and Oran was released to the French on 26 February 1945. All of North Africa ceased to be a part of the Mediterranean Theater by 1 March. Practically all supplies and equipment had been removed from these areas by that time.

Since many of the vehicles used in Italy had been employed ever since the opening of the Tunisian campaign in November 1942, it was necessary during the year to replace almost every piece of equipment. Large quantities of all types of vehicles were shipped to Italy during the winter.

Ammunition shipments to the Mediterranean Theater were canceled the last week of April, and all cargo shipments were stopped immediately, after the surrender of the German forces on 8 May.

Southwest Pacific

On 1 July 1944, the Allied forces in the Southwest Pacific, under General MacArthur had reached the western end of New Guinea. During the month the islands of Sansapor, Noemfor, and Wadke had fallen. Supplies and troops were assembled for the next step, the seizing of Morotai in September.

The size of the preparations for the invasion of the Philippines was reflected in the tonnages of supplies shipped during the first 6 months of the fiscal year. From July through December 1944, more than 3.8 million measurement tons were shipped to General MacArthur, twice the amount shipped in the first 6 months of the previous fiscal year. By October, more ships were arriving at Leyte Island than could be unloaded. A new shipping program was worked out between the ASF and the theater which provided the most critically needed supplies for combat troops first and dispatched the materials for developing heavy bases at selected intervals afterwards. Altogether during the year the ASF shipped supplies to construct 475 air strips—and there were only 78 Army and Navy airfields in all the United States on 1 July 1940.

In support of the Philippine campaign, harbor craft, barges, and other floating equipment were towed from New Guinea to Leyte and then to other bases in the area. The first such tow left Hollandia on 10 October, and arrived at Leyte in the midst of the Naval battle which followed the first landings on Leyte on 20 October. Thereafter tows left Hollandia at the rate of two per month and by 31 March, 609

units of floating equipment had been towed to Leyte and then distributed to other places in the Philippines. The port of Tacloban was developed to the point where, by December, it was unloading 7,504 short tons per month. Railway reconstruction was begun on Luzon immediately after its invasion on 9 January. A trial run from San Fabian was made on 18 January, and the next day 150 tons of supplies were hauled 75 miles southward. Eventually track rehabilitation extended to Manila, and general railway operations began by April. In that month 9 locomotives and 69 tank cars were landed from the United States.

Just before the fall of Manila in March 1945, General MacArthur sent an urgent appeal to the ASF to provide an emergency shipment of water purification units capable of providing 2 million gallons of water a day to prevent epidemics and suffering. The shipment was made at once. A second emergency request stated that the electric power system throughout the city had been badly damaged, and generating equipment was needed to produce four thousand kilowatt hours. This equipment left the United States within 18 days after the request. Another emergency requisition was received requesting a total of 288 items for use in rehabilitating the Manila water-supply system. One item desired was 2,000 feet of 60-inch pipe and another was gate valves of the same size. Neither of these was carried as a standard supply item of the Army. All of the material was shipped within 60 days after combing manufacturers and depots for the desired materials.

At the end of the fiscal year arrangements had been made to ship two floating power plants in use in Belgium to the Philippines.

In addition to the tremendous demands for combat equipment and the materials for developing the Philippines as a base, the Army Service Forces at the end of the year had begun the equipment of a 150,000-man Philippine army and was supplying tens of thousands of guerrilla forces. Also, a number of floating depots were being prepared to stock spare parts and other important items of equipment for use in future amphibious operations. The American troop strength in the theater increased 238,000 during the year and monthly shipments rose to over a million tons in June 1945.

The biggest job in the Philippines at the end of the year, was the construction of a great operating base for the handling of future military operations. Port rehabilitation was being pushed as rapidly as possible with the objective of unloading 27,000 short tons of supplies a day at Manila in July 1945.

Pacific Ocean Areas

At the beginning of the fiscal year Army, Navy, and Marine forces were locked in battle for the capture of the Marianas Islands in the Western Pacific. By August, Saipan, Guam, and Tinian Islands were firmly in American hands. Supplies then began to pour in for the mounting of the next great amphibious operation and for the construction of airfields for B-29's. Engineers began airfield, road, and harbor-development work before organized resistance on Guam and Saipan had been eliminated. Over 114,000 tons of asphalt were shipped for paving airfields.

Loadings at west coast ports for the Pacific Ocean Areas in July 1944, were 400 percent larger than the shipments made in July 1943.

A new plan was developed for supply of the area known as block loading. Ships were filled with "type blocks" of cargo—B rations, Ordnance maintenance supplies, clothing replacements, etc. for a given number of troops (10,000 usually). Combinations of these blocks were arranged on each ship in such a manner that loss of one ship did not completely immobilize any unit at the destination. These "tailor-made" loads were arranged to follow assault forces at about 10-day intervals, thus allowing the initial wave of troops to unload and clear the beach while keeping the number of ships exposed to direct enemy action at a bare minimum. Necessarily, such a method of shipping supplies required an elaborate system of identification to insure the arrival of the right block of supplies in the right ship. A careful method of marking was developed to insure proper loading and proper identification overseas. This marking practice placed a tremendous burden upon depots in the United States, who were required to mark innumerable small packages and items. West coast ports carried an equally large load in collecting all the items into the proper block which was loaded on the proper ship. The success of supply operations in the Western Pacific demonstrated the usefulness of this shipping arrangement.

Supply planning began early in the fiscal year for the attacks upon the inner defenses of Japan. Block loading was used in shipping supplies directly from the United States to assist the Marine assault on Iwo Jima beginning 19 February 1945. Equipment and materials for the development of the base followed closely behind. At the same time, supplies for the major campaign against Okinawa were being loaded at west coast ports. These began to leave even before Marine and Army troops had landed on Okinawa. Nearly a million measurement tons of supplies were shipped to the Western Pacific in the 1 month of February 1945.

In February, also, decisions were made to enlarge the bombing facilities in the Marianas. This meant additional quantities of construction and communications equipment which had to be shipped for this purpose. At the end of the year, the construction on Okinawa as a major military base was well under way.

China and India-Burma Theaters

The first convoy of American war supplies for the Chinese rolled across the Burma border into Yunnan Province in Southwest China, on 28 January 1945, marking the completion of nearly 3 years' effort to restore land communication with China. Renamed the Stilwell Road by the Chinese, the overland route was partially a new road—the Ledo Road—and partially a rebuilt section of the Burma Road. Practically every foot of the Ledo Road had been cut through dense jungle; for 6 months out of the year the work had been performed in a downpour which totaled more than 150 inches during the monsoon season. The route over much of its length had to be directed by reconnaissance and engineering instinct, since the Japanese were usually just ahead of the lead bulldozer and it was not always possible to send out survey parties in advance.

By 3 March 1945, 33 convoys had passed over the road carrying a total of 1,955 trucks, 1,065 trailers, 1,252 American and 1,444 Chinese troops, with a total cargo of 2,770 short tons of rations, personal

baggage, ammunition, organizational equipment and other supplies. By 30 April, this total had been raised to 27,995 tons of cargo. By this time, the Air Transport Command was able to haul 40,000 tons a month over "the Hump."

Another important project, begun soon after the arrival of the American troops in India in 1942, was completed when on 13 May 1945, the 1,100 mile 4-inch pipe line from Tinsukia, India, to Kunming, China, was finished. This date was 2½ months ahead of the scheduled completion on 1 August. The first gasoline through the pipe line reached China on 9 April. In addition, a 600-mile 6-inch pipe line between Chittagong and Tinsukia was placed in operation during the year. These pipe lines were constructed by troops previously untrained in such work. Together, the pipe lines totaled in length a distance greater than that between New York and San Francisco, by all odds the longest pipe line in the world.

Calcutta became the sole port of discharge for American supplies during the year. Efficient operation of the docks more than doubled the rate of discharge. On 15 March 1945, 11,200 short tons were unloaded in a single day. The tonnage moved by rail to Assam, at the head of the Stilwell Road, increased about 60 percent. Additional locomotives and rolling stock were sent out from the United States for use on the Bengal and Assam Railway. The freight-handling equipment was augmented at transshipment points. The railway ferry services were improved. More 100-car trains were used. Thus an increased flow of traffic was maintained for truck and air movement into China.

With the opening of land communication to China, additional heavy trucks were needed. Beginning in March 1945, the ASF prepared to ship 2,800 4- and 5-ton trucks and 3,200 5-ton semitrailers.

Persian Gulf Service Command

The oversea organization for the movement of supplies through the Persian Corridor to Russia ceased its operations on 1 June 1945. For 2 years this route was the principal gateway for lend-lease shipments from the United States. With the recapture of the Black Sea ports in the summer of 1944, Russia began to receive supplies through them, since they were much closer to the front. The truck assembly plants in Iran were closed between October 1944 and April 1945. The Motor Transport Service ceased operations on 1 December. American operation of the Iranian State Railway from the Persian Gulf to Teheran terminated with the existence of the command. Thus one great oversea supply operation came to an end. In its history from August 1942, through May 1945, the Persian Gulf Service Command had unloaded 10 million measurement tons of cargo, of which about 70 percent went north by rail and the remainder by highway. The ASF made arrangements during the year to move many of the troops and supplies to India and elsewhere.

GENERAL DEVELOPMENTS

Ports of embarkation continued to be the keystone in the system of oversea supply. Here requisitions were received from oversea theaters, reviewed, and forwarded to filler depots for packing and

freighting to meet designated shipping schedules. Ordinarily the ports authorized the release of shipments to the ports for loading on a 15-day basis. Convoys were set up by these shipping periods. When depots could not provide the item in time for the scheduled sailing, a "notice of nonavailability" or a "notice of delayed items" was dispatched to the port, which forwarded a copy overseas.

Each oversea theater was assigned a port to which it sent its requisitions. The New York Port of Embarkation was the supply source for both the European Theater of Operations and the Mediterranean Theater of Operations. Boston handled the Atlantic bases, except Bermuda. Charleston handled the Middle East and the Persian Gulf Service Command (supply of American troops, not lend-lease), New Orleans the Caribbean bases, San Francisco the Southwest Pacific and Pacific Ocean Areas, Los Angeles the India-Burma and China Theaters, and Seattle Alaska. In loading supplies, for example, the New York Port might make use of Boston, Philadelphia, Baltimore, Hampton Roads, Charleston, or New Orleans. San Francisco might make use of Los Angeles, Portland, Seattle, or New Orleans.

After the defeat of Germany, only one important adjustment had to be made in these port assignments. The supply of India-Burma and China was transferred to New York, and all ports on the west coast gave their full attention to supplying the American forces in the western Pacific Ocean.

The Change to Requisition Supply

A major change in the oversea supply system took place in 1945, when all supplies were placed on a requisition basis. In phase II of the supply system as set up by War Department Circular 203, 23 May 1944, supply was called semiautomatic. Major items of equipment reported by the oversea theater on a matériel Status Report were shipped automatically to meet the shortages shown by this report. Ammunition shipments were based upon the Ammunition Supply Report. All other items were shipped on requisition. Actually the Matériel Status Report and the Ammunition Supply Report resembled a requisition. They differed mainly in that they were sent at monthly intervals, presented a complete picture of the supply status of the items concerned, and did not specifically state the quantities the theater desired. The quantities to be shipped were determined by the ASF on the basis of what was already on hand, and what was authorized.

The Matériel Status Report was adopted early in the war to give the ASF a picture of the stockpiles accumulated overseas through automatic supply in support of task forces. Later, it developed into a form of requisition as just described, but it never lost its important function of providing the port of embarkation and ASF Headquarters with detailed information on the status of supply overseas. With the development of the supply control system, mentioned later, it became more important than ever to maintain accurate, up-to-date records of supply stocks overseas, as well as of their rate of consumption. In May 1944, part III, TM 38-205, extended the well-tested domestic stock control system to oversea theaters. As this system was placed in effective operation overseas, and as theater supply organizations acquired a measure of control over their stocks comparable to

that exercised in the zone of interior, the detailed data on overseas supply status maintained at ports of embarkation tended more and more to duplicate that maintained in the theater.

There was duplication, also, between the data maintained by the chiefs of services and by the ports. The former reflected current stock status in terms of the records of shipments from depots to the ports, on the assumption that all such shipments reached the port and eventually the theater on schedule. Actually, of course, there were always discrepancies at any given time between technical service and port records. These in turn differed from those maintained in the theater, even though over a long period of time they could usually be reconciled. But for purposes of determining supply status at any given time, the discrepancies presented a serious difficulty. The system of various records which had to be checked against each other, and the procedures for follow-up and review of supply actions, produced the difficulty.

In July 1944, it was proposed to abolish the system of overseas supply status records at the port, including the Matériel Status Report, and to estimate overseas demands mainly on the basis of the issue experience of depots in the United States. The flow of overseas supply would then be regulated almost entirely at the source, and the mechanism of the port would tend to become primarily a combination of valve and pump for maintaining the flow at an even rate. Overseas theaters would be supplied entirely by requisitions which would be edited against allocations projected several months in advance. Control over supply would be maintained through stock control records, both in the zone of interior depots and in the theaters, rather than through the running inventory kept at ports of embarkation.

This plan, with many variations, was studied and discussed by the Army Service Forces throughout the summer and fall of 1944. During this period, meanwhile, certain modifications were made in the Matériel Status Report. Allowances were included for the French forces operating with the U. S. Army in Europe and for the Chinese army. An additional factor was added to allow for the time required for supplies to travel from depots to overseas commands. Another factor was incorporated in the Matériel Status Report, called the forecast level, to insure that supplies designated for certain units would reach the theater at approximately the same time as the troops arrived. These were minor improvements, however, and discussion continued to center on the proposed change in the fundamentals of the supply system.

Not unnaturally, many supply officers were reluctant to abandon the procedures so painfully developed over the past 2½ years. The chief appeal of the proposed method was its simplicity and the possibility it offered of reducing personnel and paperwork, chiefly at the ports, by eliminating numerous reports and records. On the other hand, absolute reliance on stock control to regulate supply throughout the distribution system appeared risky, particularly since the overseas theaters were still in the early stages of installing effective stock control. Many doubted whether theater needs could be projected with any firmness 6 or even 3 months in advance.

By September, however, the apparent likelihood that the European front would soon collapse and the progress of overseas stock control,

among other factors, created an atmosphere favorable to change. About this same time, certain other procedural changes which also depended on the installation of stock control in overseas theaters were about to be adopted. Late in September, the Director of Plans and Operations decided to eliminate supply by Matériel Status Report and to substitute a system of allocations and requisition supply beginning 1 January 1945, by which time it was hoped the United States would be engaged in a one-front war. The interim period was to be spent in developing procedures and a satisfactory theater inventory form.

Prolongation of the European war into the spring of 1945 caused a postponement of the inauguration of this plan. The new procedures, however, were finally published in the middle of March, to become effective 1 May 1945. On this date, all overseas theaters were placed on requisition supply. The principal feature of the plan was a Critical Items Report which replaced the Matériel Status Report as an instrument of statistical control. This report did not serve as a requisition. Theater commanders submitted requisitions for critical items separately, not to the port as heretofore, but directly to the chiefs of services. The Critical Items Report was prepared by the port of embarkation, on the basis of data submitted by the theaters; also, a perpetual inventory was maintained at the port reflecting losses, quantities afloat, and en route to the port. The valuable checking function of the port inventory records was thus retained in the new system.

The strengthened position of the chiefs of technical services, however, was perhaps the most important feature of the new procedure. As already noted, overseas requisitions for critical items were submitted directly to them rather than through the port. The technical services also were responsible for preparing distribution plans for items for which the supply was not expected to meet overseas demands. These distribution plans complemented the Critical Items Report as a basis for editing overseas requisitions and constituted a 3-month projection of the supply and demand status of the items concerned.

A copy of overseas requisitions for critical items was dispatched to the appropriate port of embarkation. In the past requisitions for controlled and restricted items had ordinarily been referred from ports to chiefs of technical services for action. Now chiefs of technical services automatically notified ports of quantities available for shipping, whereupon the port gave the chief of service or the designated depot the necessary shipping instructions. Immediate action by chiefs of technical services became possible, since the requisition no longer had to be forwarded by the port but came directly from overseas.

Overseas Inventories

In January 1944, the theater levels of supply authorized by the War Department were lowered for each overseas area. Except for minor adjustments, these levels remained in effect until November. Then further reductions were made for the Mediterranean Theater, the Southwest Pacific Area, and the South Pacific Base Command. For the Mediterranean Theater, the maximum inventory level for equipment, replacement items, spare parts, ammunition, and construction supplies was reduced from 75 days' supply to 60 days. Subsistence levels of supply were reduced from 75 to 60 days' supply for

the Southwest Pacific, from 60 to 45 days' supply for the South Pacific Base Command, and from 60 to 30 days for the Hawaiian Islands Group. In January, equipment and ammunition inventory levels in India-Burma and China were reduced from 180 to 120 days' supply; the next month, subsistence inventories were cut from 120 to 105 days' supply, and construction supplies from 180 to 120 days' supply. In March, subsistence inventories in ETO were reduced from 60 days to 50 days' supply.

After the defeat of Germany, all supply inventories for American forces in Europe were fixed at a uniform 60 days' requirements, while in the Pacific a uniform 90 days' supply was established. This general reduction was possible because there was no longer any worry any place about a possible interruption in American supply lines.

The procedures at ports for editing supply requisitions which were in effect at the beginning of the fiscal year had been developed over a long period of time as a complete check on the demands of oversea commanders. This had been necessary, in the first place, because oversea commanders did not have a comprehensive view of the entire supply situation, of which their individual demands were only a part. In the second place, since the exigencies of operations overseas had left theater supply organizations little opportunity to establish effective inventory control systems, this editing was necessary in order to prevent over-stockage.

In May 1944, editing instructions were given to ports of embarkation, designed to maintain adequate supply inventories overseas, on the reduced basis prescribed the preceding January. They allowed an additional quantity, above the maximum authorized inventory level, in order that there might always be sufficient supplies en route to maintain the theater's minimum inventory level. This "order and shipping time" factor was defined as the average length of time required after submission of a requisition for supplies to reach the theater. The sum of the maximum theater levels and the order and shipping time factor was now called the requisitioning objective. The instructions emphasized the fact that stocks actually within the theater were not to be permitted to rise above the maximum authorized level, and the tolerance for the order and shipping time factor was to be carefully scrutinized to prevent the flow of supplies to the theater from becoming too rapid. A warning was also issued against filling oversea requisitions covering several months' requirements, when shipment in a single installment would cause excess stocks overseas and place a strain on their depots. The new editing procedures did not apply to the European and North African Theaters, nor to ordnance supplies to the Southwest Pacific Area and China, Burma, and India. The instructions also recognized that port review of requisitions was, in effect, a substitute for effective stock control overseas. The continuance of this practice was now definitely an interim measure.

By October 1944, stock control procedures had been put into effect in most oversea theaters. At this time, also, there seemed a prospect that the European war might be concluded at an early date. Accordingly, on 10 October, a new policy was put into effect for editing oversea requisitions. Once it had been determined that an oversea theater was operating on a sound inventory control basis, ports of embarkation

tion were authorized to edit requisitions primarily for proper nomenclature and correct preparation, accepting the theater's computations of the requisitioning objective. Only obviously excessive or otherwise questionable demands were to be reviewed. Status report and operational project requisitions were not affected by this policy. The new arrangement was designed to accelerate the processing of oversea requisitions, since effective stock control overseas made a thorough analysis and review of theater demands unnecessary.

A further step in speeding up the handling of requisitions was taken early in October by eliminating the notices of availability which depots forwarded to ports immediately upon receipt of an extract oversea requisition. It was assumed that oversea supply was functioning smoothly enough to permit doing away with the paperwork involved in reporting each individual item which a depot could supply. Instead, depots informed the port only of those items which were not available or which would be delayed until available from production.

Another change in procedure was inaugurated in January by section IV, War Department Circular 5, 1945, which provided that items requisitioned from overseas, but not available and not standardized for procurement, would be canceled automatically upon issue of a notice of nonavailability. The theater might then requisition again with a special justification of the need, whereupon procurement would be authorized. This action, in effect, canceled many open requisitions which were otherwise carried for long periods as incomplete supply action. The notice of delayed items was used for standard articles of supply which were not in depot stock for immediate shipment.

These measures, which in themselves were simply improvements in paperwork and not of major importance individually, nevertheless were important landmarks in a steady trend toward simplifying and refining the machinery of oversea supply. More and more the supply organizations within oversea theaters were made to assume their full share of the burden, particularly in paperwork, of oversea supply. As these organizations were perfected the operating gulf between the zone of interior and the oversea portion of the supply system was steadily being bridged. No longer was the ASF by its own work in the United States endeavoring to correct or counteract any deficiencies in oversea supply agencies. Theater commanders were made more responsible for either under- or oversupply.

Subsistence Overseas

In September 1944, a new method of reporting subsistence inventories in oversea theaters was begun. The problem of maintaining subsistence stocks overseas above minimum safety levels while at the same time preventing the accumulation of excesses has always been more acute than for most other categories of supply. For one thing, there was a diversity of types of rations, and the consumption of any one type, or of the components of a type, was never uniform. The new reporting system installed in September approached the problem by breaking down the *A* and *B* type rations (those provided for normal field conditions) into their component parts, and classifying these into eight well-defined groups. One such group comprised meats, poultry, fish, and eggs; another, milk products, butter and fats.

On this basis, by means of a system of regular reports, it was possible to ascertain the number of days of supply of balanced rations—that is those comprising the prescribed amounts of all the component groups—on hand in a theater, and to isolate the component groups in which excesses had accumulated. Thus, data as of 31 January 1945, for the Southwest Pacific Area, indicated 75 days of supply of balanced rations on hand and an additional 199 days of supply for unbalanced components of group VII. In this group, therefore, there was a total of 274 days of supply, an excess of 191 days over the authorized level of 83 days. For emergency type rations the reporting problem was naturally much simpler, since these were packaged and consumed as units.

Regular reporting of ration levels overseas over a period of several months provided a sound basis for revising the system of ration supply, as well as for taking action to reduce specific excesses. Excess stocks naturally tended to accumulate in those theaters where activity was on the decline, since reduction of troop strength usually proceeded more rapidly than revised supply levels could be put into effect. In the South Pacific, for example, where a maximum level of 60 days was in effect, supplies of one component group on hand increased from 244 days in December to 1,665 days in April (after a small decline in January and February).

At the end of the third quarter of the fiscal year, however, the six major theaters all showed material improvement. The European, India-Burma, and China Theaters were within authorized levels. Balanced rations for the Mediterranean and Central Pacific were slightly below minimum, but this was offset by shipments en route. The excesses in the South Pacific were reduced by transfers to the Southwest Pacific and the Pacific Ocean Areas to meet current needs in forward areas.

Late in May 1945, an allocation plan was put into operation for supply of certain critical subsistence items to oversea theaters. Allocations were based on projected rather than current theater strength, and employed the new reduced consumption factors which had been established for oversea theaters in March. The ration scales recommended by theaters were approved by the War Department, whereas formerly they had been left to the discretion of theater commanders. The theater allocations also took into account anticipated availability of subsistence, and were computed quarterly. The Pacific Ocean Areas were not covered by this plan; studies were under way for this area at the close of the year.

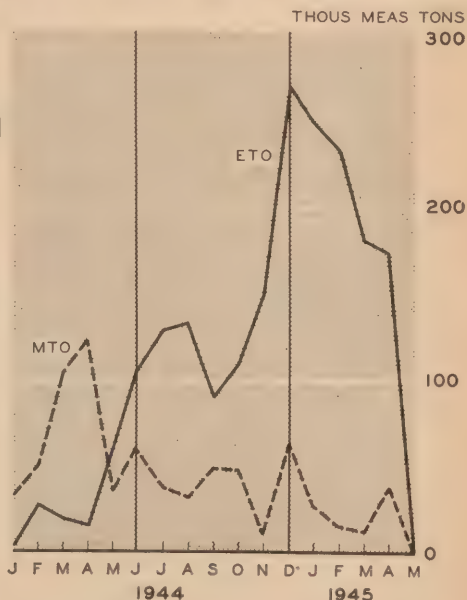
Ammunition

Problems in ammunition supply during the fiscal year arose almost wholly out of conditions in the European Theater, but all major theaters were affected in some degree by the drain which European operations made on total resources. Oversea expenditures of ammunition began to rise sharply in almost all categories as early as the spring of 1944. Expenditure of small arms ammunition reached a peak of 225,000,000 rounds in September. November saw mortar ammunition expenditures climbing almost to the billion round mark. In the same month, expenditures of medium and heavy artillery ammunition neared 200,000 tons. The spectacular increases, of course, occurred

in Western Front operations in Europe. In November, during the general Allied offensive which hammered simultaneously at all the important sectors of the front, over 2,000,000 rounds of high explosive 105-mm howitzer shells were fired. In December, this figure rose to over 2,900,000. In the heavier calibers, the increase in expenditure was even more alarming because the supply was smaller.

In September, the European Theater cabled urgent requests for more ammunition in all the major artillery categories. In three types of heavy artillery, these demands exceeded not only available stocks on hand but also expected production. The ASF was faced with the prospect of expanding production facilities, the effect of which would not be felt for several months, and of thereby risking

GROUND AMMUNITION SHIPPED TO EUROPEAN AND MEDITERRANEAN THEATERS



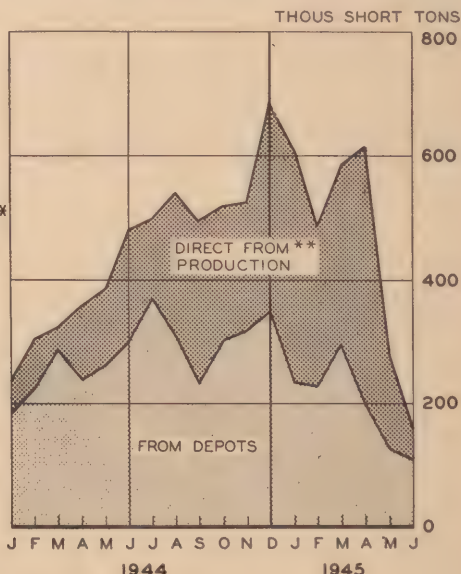
a sudden ending of the war, with large stocks on hand, and with an idle industrial plant. In December, a mission of high-ranking officers arrived in this country, from the ETO with still larger requests to support the anticipated offensive across the Rhine. During this month, expenditures of the three principal types of 240-mm howitzer shells ran about 27 percent above the June-November average. Such increases failed to reflect fully the real situation, since shortages had already forced the theater to ration the more critical categories.

This situation was not completely unexpected by the ASF. The campaign in Italy in the winter of 1943-1944 had forecast what the European invasion might bring. A system of monthly allocations of ammunition had been initiated in 1944, to insure equal distribution of the scarcer types, and this system was highly developed by the time the demands from Europe rose to record heights. Extraordinary measures were taken to meet the crisis. Shipments were made direct from the production line to dock-side, and each shipment was followed through every step of its progress until discharged in the

theater. Theater stock records were reviewed and corrected at 10-day intervals. Shipments to some other theaters were wholly suspended, and some theater stocks were robbed in order to supply the ETO.

Not only was the ETO allocated the major production of nine high explosive artillery shells for December, January, February, and March, but also the ASF made definite commitments to float each month's production so that it would reach the theater by the end of the following month. Thus, all December allocated production was to reach ETO hands before 1 February. The various methods taken to expedite shipment, including direct movement from plants to ports without testing, succeeded in reducing the average time from request

AMMUNITION SHIPMENTS TO PORTS* FROM PRODUCTION AND FROM DEPOTS



* FOR ALL THEATERS. INCLUDES BOMBS, BUT EXCLUDES SMALL ARMS AMMUNITION.

** DERIVED BY DEDUCTING TONNAGE SHIPPED BY DEPOTS TO PORTS FROM TONNAGE SHIPPED OVERSEAS BY PORTS.

for port release to arrival overseas from 55 days to 46.7 days. By the middle of February, only one item was lagging behind commitments for floating; by 16 April only 4 percent of March production had not been shipped.

Actual ammunition expenditures in the ETO never reached estimated heights. For example, in the 3 months from January to March 1945, the ETO expended 40 percent of the rounds estimated to be fired by 105-mm howitzers, and 56 percent of the estimated rounds for the 155-mm howitzer. The quantities of ammunition on hand in both ETO and MTO, shown in the accompanying charts, closely paralleled authorized levels. For small arms ammunition, stocks generally exceeded authorized levels.

At times during the fiscal year about 50 percent of ammunition shipments from the United States came directly from production plants. In December, 265,000 measurement tons were shipped to ETO and 60,000 tons to MTO. In some categories, ammunition

shipments far outstripped the original allocations. The quantity of one type of 10-mm howitzer shell shipped to the ETO in December was over 251 percent of the amount allocated; for the 155-mm howitzer, the amount was 150 percent above the allocation; for the 155-mm gun, it was 112 percent. Shipments continued at comparable rates into the spring of 1945.

In May, the cessation of hostilities in Europe made it possible to discontinue the allocation system. Since the end came suddenly, large accumulations of ammunition were left in the theater. These then became a potential stockpile for the supply of other theaters. Prompt diversion of ammunition shipments from Europe to the Pacific were reflected in an improved status of supply in other theaters, particularly in the Southwest Pacific. All major theaters about this time reported some very large overages in certain categories as compared with the authorized level for combat operations. In many cases, these were caused by changes in the anticipated expenditures per day, the inventory level, or the number of weapons in the theater or number of weapons in the hands of troops, rather than by excessive shipments.

Heavy Artillery

It also became apparent from experience in Italy in the winter of 1943-44, that demands for heavy artillery pieces would exceed all previous estimates. The problem was primarily one of requirements and procurement. Serious strain was placed upon oversea supply agencies, however, in meeting unexpected demands for heavy artillery pieces both in the Italian operations and later on the Continent. ASF Headquarters was forced to take the initiative in pressing for increased procurement, since it alone had the data which demonstrated conclusively the increased expenditures. As early as February 1944, the Distribution Division pointed out rapidly developing shortages in heavy artillery and recommended a new method of computing requirements. At this time, replacement tubes and recoil mechanisms were procured in quantities proportionate to the total number of complete weapons procured, using ratios derived from past experience. These ratios, however, were well under the rate at which the current heavy ammunition expenditures were using up artillery tubes and recoil mechanisms. The problem reached all the way back to production capacity, since industry was not geared to increased simultaneous production of both complete weapons and replacement tubes. The Distribution Division recommended accordingly that spare cannon should be procured on the basis of total ammunition shipped to the theater. The number of replacement cannon needed was computed by dividing the amount of ammunition by the number of rounds which could be fired from a tube before the latter had to be replaced. This method of computing requirements was adopted.

Since some time would be required before the necessary production facilities would be available, close supervision of the distribution of available cannon on a world-wide basis was necessary. As in the case of ammunition, distribution of artillery was effected through allocations to active theaters. In addition, it was necessary to authorize "stripping" of complete weapons in order to obtain replacement cannon in some cases. In the autumn of 1944, a formal monthly report

was initiated, known as the Artillery Matériel Report. In March 1945, this report was discontinued and supply of the critical heavy artillery items was brought within the framework of ordinary supply operations.

Tires

Because of anticipated tire shortages overseas in the fiscal year 1945, the Commanding General, Army Service Forces, was directed to administer uniform policies governing production, procurement, allotment, supply, use, and conservation of all Army tires and tubes. The Army's requirements and reserves were lowered to the barest minimum and drastic action was instituted to conserve tires. Deliveries during the calendar year 1944 remained constant and actually decreased in the fourth quarter.

The rapid advance of our troops through France following the Normandy break-through, and the lack of French rail transportation necessitated use of vehicles at an unprecedented rate. Vehicles were operated 24 hours a day and tire consumption rose. Tires were expended at a rate of over 5,000 per day. Theater stocks of automotive tires available for issue to troops at one time reached a net stock position of approximately 35,000 tires. Prior to this desperate supply situation, the ASF instituted action to concentrate all of the available and usable Army stocks of tires and tubes within the United States into five centrally located depots for immediate shipment overseas. Spare tires were removed from all Army vehicles within the United States and only a small percentage of used tires was made available to stations for use as spares during maneuvers and off-post operation. Certain critical-size tires were removed from unserviceable vehicles which were not scheduled for repair within a 60-day period.

Action was also taken to apportion the Army's supply of tires as equitably as possible in the various theaters of operations in proportion to the number of vehicles in each theater and in line with contemplated operations. Used tires with 25 percent or more of any tread or retread remaining were classified as suitable for oversea shipment in order to obtain the maximum number of available tires. Inactive theaters were called on to ship operating reserves of tires to the active theaters. Supply of vehicles to theaters of operations was not retarded by the shortage of tires, since new vehicles were shipped boxed without tires. All vehicles without spare tires and reprocessed used vehicles at one time were shipped with tires suitable only to move the vehicles.

During the fall of 1944, the repair of unserviceable tires was expanded over 62 percent, and United States tire contractor repair capacity was increased from 96,580 tires per month to 153,374 per month. Army tire repair companies in oversea theaters operated at maximum capacity in order to return unserviceable but repairable tires to units promptly, thereby reducing requirements from United States stocks. Strict maintenance procedures were enforced in all theaters to prevent all but normal operational tire failures.

The European Theater of Operations had urgent demands for 721,331 tires scheduled to be shipped by 1 January 1945. As a result of the drastic action taken by the War Department, 97 percent of this requirement was floated on schedule. Tires scheduled for shipment

to the European Theater of Operations were loaded on vessels leaving the United States every 5 days. This schedule was maintained until the demand from ETO was reduced below the danger level.

The highest priority was authorized for tire and tube shipments to the European Theater of Operations and Mediterranean Theater of Operations. As Army stocks of tires in United States depots were exhausted, tires were shipped direct from manufacturer's facility to ports of embarkation. Increased United States production of Army tires in the first and second quarter of 1945 partially alleviated the tire shortage prior to V-E Day. The extensive land operations in ETO, however, continued expenditure of tires at an unprecedented peak right up to 8 May 1945.

Radio Sets

The battle loss rate for infantry front-line radio sets—the handy-talkie and the walkie-talkie—rose to unexpected heights during the year. The monthly replacement factor per 100 sets of the walkie-talkie increased from 13 in August 1944 to 20 in December, to 28 in February 1945. Monthly shipments to the ETO were increased each time, and production was expedited until 2,500 sets per month were shipped in the period from January through April 1945. The monthly replacement rate per 100 sets of the handy-talkie was increased from 13 to 20 in November 1944, to 26 in December 1944, and 32 in February 1945. Monthly shipments to ETO had to be increased each time; production was expanded until 6,000 sets per month were shipped January through April 1945.

The Turnaround Cycle for Oversea Supply

Careful study and analysis were made during the year of the exact time consumed in each stage of the overseas supply system, from the time requisitions for maintenance supplies left overseas theaters to the time when the desired supplies arrived at the overseas port of destination. This included the time for the requisition to get to a port of embarkation and then to a depot, and for the supplies to get from the depot to the port and overseas. This period of time came to be called the "turnaround cycle for overseas supply." The studies of the times involved in this cycle were made to determine where delays were occurring and what might be done to speed up the entire overseas supply process.

These studies, made in the last half of the fiscal year, were a series of surveys, each guided in large measure by the findings of the one which preceded it. The first study, in January 1945, traced the several time elements in filling requisitions for the European Theater. Successive studies brought out comparable data for requisitions received from the Mediterranean Theater, Pacific Ocean Areas, India-Burma, China, and the Southwest Pacific Area. They analyzed more thoroughly those steps of the supply cycle occurring within the depot system in the United States.

The January study of supply to the European Theater sought to answer the question, "How long does it take to get supplies to the ETO?" A block of almost 6,000 shipments to the ETO through the New York Port of Embarkation during January and early February was examined, and the time taken in each step was recorded. At the

New York Port, in the period under examination, the shipping period schedule—which set deadline dates for processing theater requisitions, moving supplies into port, and loading cargo aboard ships—allowed a span of 57 days from the arrival of a requisition from overseas to the sailing of the convoy bearing the supplies. An additional 10 days' mail time from the ETO to the New York Port and 20 days for supplies afloat to the theater completed a theoretical "turnaround cycle for oversea supply" of 87 days. Actually, however, the survey revealed that requisitioned supplies were requiring an average of 133 days to reach the theater, in the case of normal requisitions and 76 days for cable requisitions (which received priority handling).

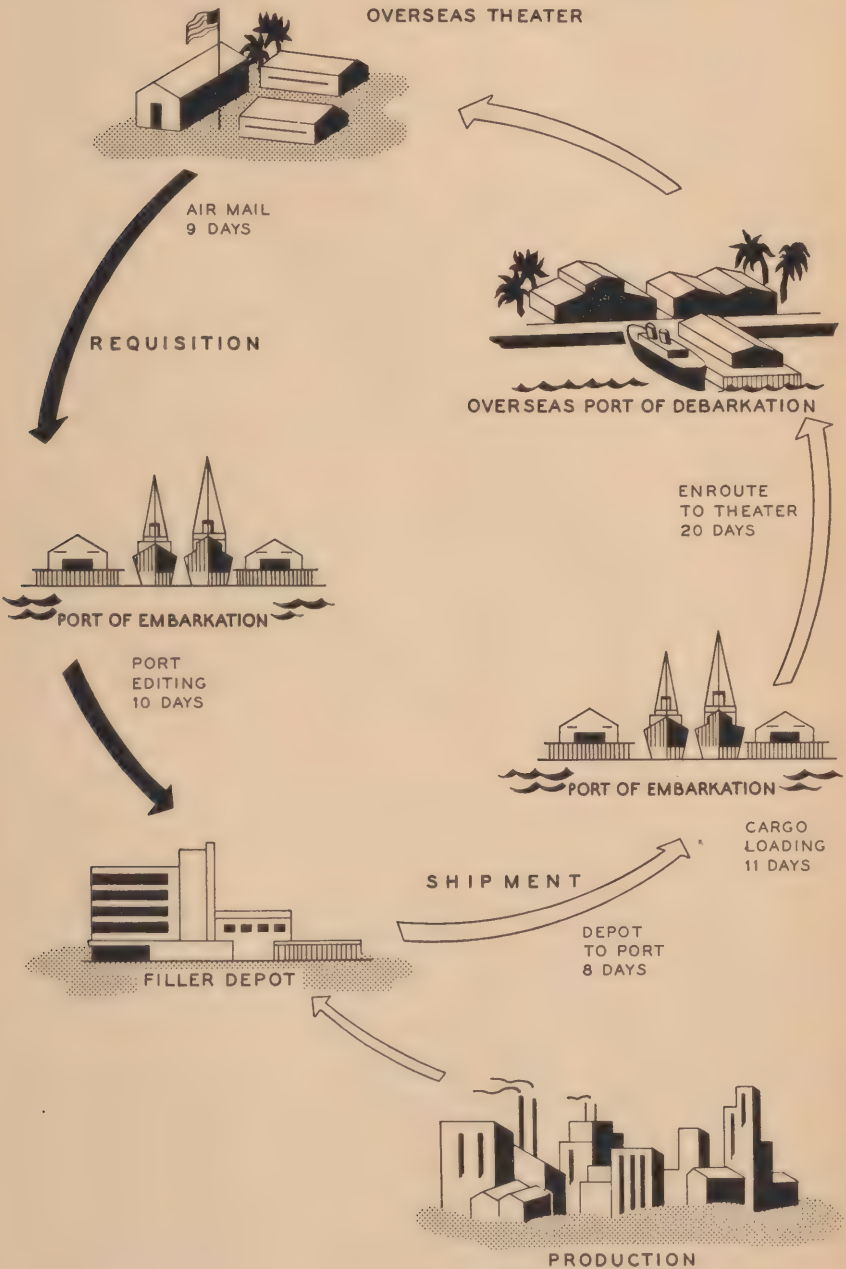
The study indicated that the most time-consuming phase of the supply cycle was that in which requisitions were being processed within the depot system. Seventy-five days out of the 133-days average fell within this phase. For the Mediterranean Theater "in depot system" time was 57 days (out of 115); 36 (out of 118) for Pacific Ocean Areas; 66 (out of 181) for the Southwest Pacific Area. Independent studies with a somewhat different approach, which examined the performance of depots in shipping requisitioned supplies to ports by scheduled dates tended to verify the turnaround cycle analysis. It was found that, over a period of 2½ months up to March 1945, only 28 percent of requisitioned supplies reached port by the scheduled date, and only 48 percent were in port by the time the convoy sailed 15 days later. The balance of the convoy cargo was comprised primarily of supplies requisitioned for previous months.

In view of these findings, special attention was given to determining the causes for delay within the depot system. Careful analysis of the data greatly modified the unfavorable impression given by the overall averages, since to a considerable degree these averages were influenced by a small number of requisitioned items which had been delayed for excessively long periods. Thus, for shipments to the ETO, 25 percent were forwarded by depots to the port within 15 days, and 50 percent within 41 days, even though the average "in depot system" time for the ETO was 75 days. Special studies were completed in regard to those items of supply lagging badly in the depot system, establishing the points where delays in backordering and procurement existed.

Immediately following VE-day, still more thorough surveys were made for the Pacific and Far Eastern theaters. For the Southwest Pacific, it was impossible to get a picture of supply under ordinary conditions, since inadequate shipping space and theater discharge capacity created backlogs which could not be moved from West Coast ports. The turnaround cycle for this theater, in short, bore little relationship to the real capacity and performance of the ASF supply system in the Zone of Interior. The trend after VE-day showed improvement, with more shipping becoming available and with an increase in the ability of SWPA to absorb supply.

The Pacific Ocean Areas and the India-Burma and China Theaters, showed shorter turnaround cycles than SWPA, as well as improvement from February to May. For POA normal requisitions, the cycle dropped from 118 to 101 days, a 15 percent improvement. The cycle for India-Burma and China declined 3 percent, from 141 days to 137 days.

TURNAROUND CYCLE FOR REQUISITIONED SUPPLIES TO EUROPEAN THEATER OF OPERATIONS



For the Southwest Pacific Area, in-depot time, by the end of May, averaged 66.7 days, for POA 38.3 days, for IB&C[†] 54.5 days. This record was substantially the same as in February with the exception of a 10-day reduction in "in depot" time for IB&C. The relatively low average for POA shipments resulted in part from the fact that operations in the Western Pacific demanded immediate shipment of many supplies on specially loaded ships; items which were not available were simply canceled, rather than being held on back order or extracted to procurement, and the theater had to get along without them. In this instance, therefore, the study did not indicate a normal supply situation.

These turnaround cycle studies warned the ASF that delays were occurring in shipping supplies to ports. There were several possible explanations. For one thing, ample stocks might not be maintained in filler depots, or there might be delays at stock control points in locating sources of supply. Depots might not feel a sense of urgency in meeting shipping deadlines. On the other hand, oversea theaters were requisitioning some items which were not standard articles of military supply and which had to be specially procured. Each technical service intensified the review of its depot operations to be sure that they were performing their oversea supply responsibilities satisfactorily.

It should also be remembered that many major items were not requisitioned by theaters, and were not included in the turnaround cycle studies. The important items on semiautomatic supply, comprising about one-third of the tonnage shipped, moved much faster than the requisitioned items, since chiefs of technical services could determine availability of stock before ordering shipment. Yet the final successful functioning of the supply system was to be measured in terms of its entire performance, in terms of providing maintenance supplies, as well as the critical supply items.

Redeployment

With the final surrender of Germany both the European and Mediterranean Theaters of Operations became inactive oversea theaters. Critical weapons and other equipment on hand on these areas became a supply asset to be used in meeting the demands of the Pacific Theaters. ASF records were used to indicate the quantities of critical items on hand in active theaters, and, with the assistance of supply officers in the theater, estimates were made of the proportion on hand which could be used in the Pacific.

The first supply problem was that of providing all the necessary equipment for units sent from Europe to the Pacific either directly or through the United States. These units were to have their complete initial equipment and necessary replacement items for 60 days filled by the inactive theater. All the equipment was to be shipped directly to the Pacific regardless of whether the unit proceeded directly or through the United States. Inactive theaters were expected to submit a theater shortage list for units being moved directly. For units returning through the United States, the inactive theater notified the ASF of nonavailability of certain items.

Each month the ASF was expected to prepare shipping instructions to be issued to the inactive theater. These instructions specified the

last sailing dates for shipments from the inactive theater. Oversea theaters were also provided with a priority letter showing the order in which the general supplies other than unit equipment would be shipped to the Pacific or returned to the United States. Some excess equipment might be returned for repair in United States maintenance facilities before issuance for troop use.

Another phase of redeployment supply was the curtailment of shipments to inactive theaters. Ports of embarkation were given an "Approved Requisition List for Inactive Theaters" which itemized the categories of supplies deemed to be the minimum essentials for the functioning of inactive theaters. The shipment of critical items to inactive theaters, was of course, ended with the cessation of hostilities. Food, clothing, petroleum products, and recreational materials made up the bulk of the items which still had to be supplied to inactive theaters.

The War Department put all redeployment procedures into effect on 12 May 1945. In the following 6 weeks the movement of supplies to the Pacific was begun.

Chapter 3. TRANSPORTATION

Ocean Transportation

Shipping remained a limiting factor in the overseas military effort throughout 1945. Accordingly, the utmost effort was still required to obtain maximum results from the ships available to the Army.

During the fiscal year 1945, a total of 2,662,000 persons were moved overseas by ocean transport. The peak number of embarkations occurred in January 1945, when 295,000 passengers left ports of embarkation in the United States. In the 43 months since the war began, the Army has moved 7 million persons overseas by surface vessels. In 1944, 2,695,000 passengers were shipped overseas, nearly 33,000 more than in the current year.

From August 1944, to February 1945, the outward movement of units far exceeded all other types of passengers. After February, replacements made up the bulk of oversea shipments. In October 1944, for example, 210,400 passengers out of a total of 277,100 were units going overseas. In the 7 months from August to February, 25 infantry divisions, nine armored divisions, and two airborne divisions were sent to Europe. The personnel of these divisions was moved in 126 ships, while the organizational equipment filled 266 fully loaded Liberty ships.

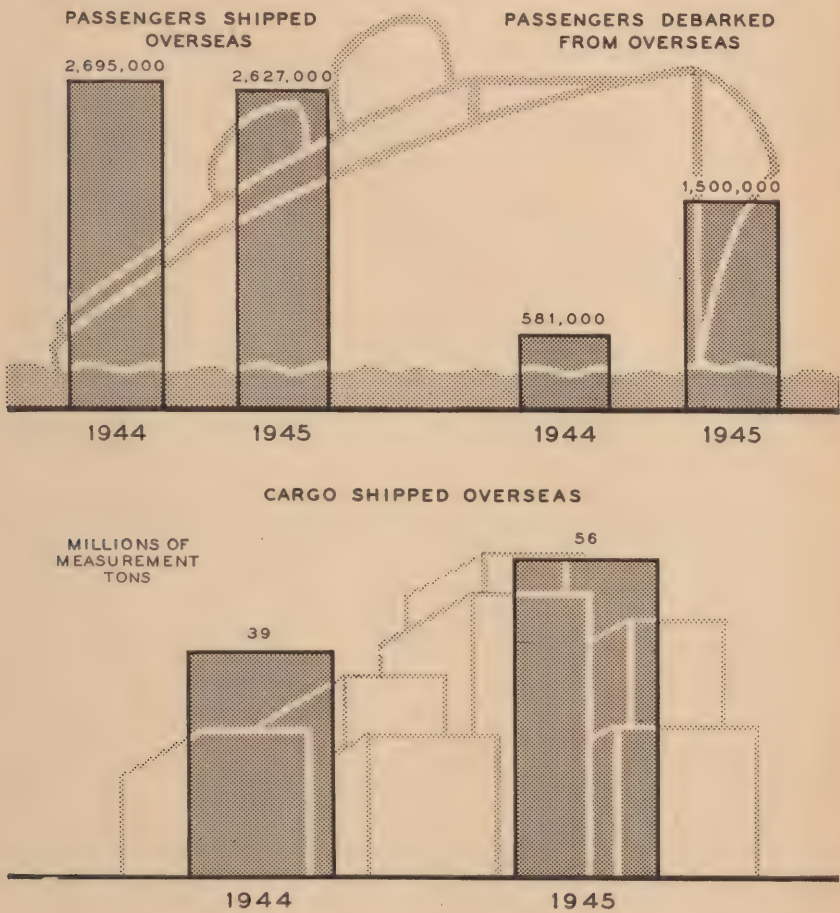
The number of these large units entailed some new procedures in oversea transportation. Before D-Day, units destined for the European Theater of Operations carried only their essential equipment with them. Organizational equipment and general supplies were pre-shipped in bulk and issued by the theater upon their arrival. This program had to be changed after combat began on the continent. The Army Service Forces was directed to ship all units arriving after the first of September fully equipped and convoy loaded. This meant that upon debarkation, all equipment had to be on hand for the units so that they could move directly into combat areas.

The debarkation of passengers from overseas at United States ports naturally was on the increase at the end of the year. In the past, the largest proportion of debarkations was made up of prisoners of war. May and June 1945, set new records. In May, nearly 169,000 persons were debarked while in June, total debarkations numbered 276,000. Of the June total, 87,000 were troop units, 69,000 were soldiers being returned under the rotation policy, another 75,300 were soldiers returned for discharge, and 34,000 were patients. For the year as a whole, nearly 1,500,000 passengers were debarked compared with 581,000 in the preceding year.

In 1945, the Transportation Corps shipped more than 56 million measurement tons of cargo overseas, this compared with 39 million measurement tons in the preceding year. Since the beginning of the

war, total cargo shipped overseas has reached a total of almost 120 million measurement tons. The peak month in overseas shipment occurred in March 1945, when 5,926,764 measurement tons of cargo left American ports. Of the total shipped during 3½ years, approximately 92 percent moved on vessels loaded by the Army, while 8 percent was shipped on commercial contract.

OVERSEAS TRANSPORTATION—FISCAL YEARS 1944-45



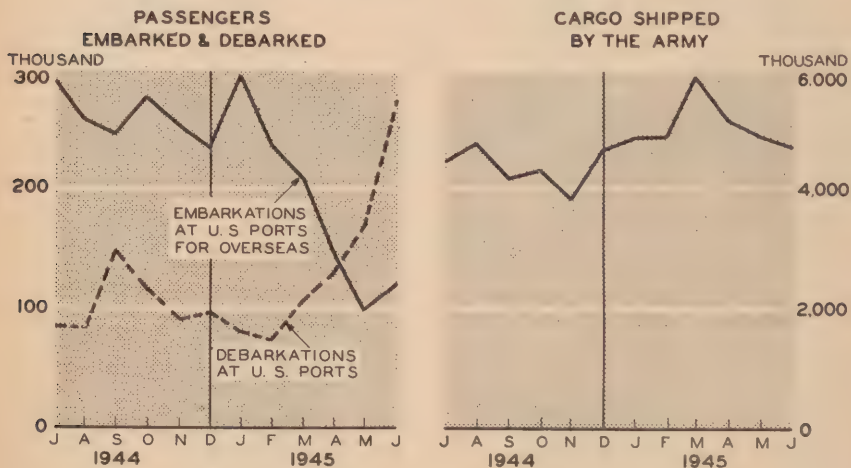
Prior to VE-day, the highest monthly movement of in-bound tonnage came to 350,000 measurement tons in July 1944. In May, there was a rapid acceleration in the return. As of the end of the year, some 3,500,000 measurement tons of cargo had been shipped back to the United States, compared with 2,200,000 in the preceding year and with 6.3 million for the war as a whole.

As REX shipments arrived at ports by special train or express, they were loaded as top cargo on fast ships sailing the same day. At

the port of discharge, these shipments were the first to be unloaded. Delivery to the theater supply officer in 15 days from the date of shipment from source was the target for this service.

The intensive fighting in Europe required new peaks in the movement of ammunition and explosives. The high point came in December 1944, when 685,125 short tons were shipped to all theaters. These large quantities meant the dispatching of full shiploads and consequently a revision in the use of explosive loading piers. In the past it had been the practice to ship part loads of ammunition, usually not more than 2,000 tons to a vessel. Other cargo was then added before the ship went overseas. With this amount of ammunition, it was possible to load at piers near large urban areas such as New York. With the shipment of vessels fully loaded with ammunition, explosive loading piers near congested ports could not be used. A new ammunition loading pier adjoining one erected by the Navy in Lower New York Harbor at Earle, New Jersey, was used to a

OVERSEAS TRAFFIC



greater extent than was expected when construction was begun. A new two-berth ammunition pier in San Francisco Bay was placed in operation during the year.

The shipment of assembled aircraft by water continued at increased rates, utilizing techniques which had been introduced in the previous year. Some 13,000 aircraft were transported, 61 percent on the decks of tankers, 9 percent on the decks of dry cargo ships, 17 percent in CEC type vessels, and 13 percent on escort carriers.

The continued shipment of maximum deck loads brought about improved methods of lashing and blocking, particularly for boxed and crated items. Experimentation showed that the usual types of wire rope lashing exerted the main pressure downward, whereas the principal force to be counteracted was horizontal, resulting from the ship's roll and the impact of breaking seas. Accordingly, a new type of lashing was developed using steel rods, shackles, and turn buckles which afforded superior security for the cargo and dispensed with

wire rope—a critical short item of supply. Continued study was also given throughout the year to the shipments of palletized cargo. Investigations were made to determine the stability and rigidity of the load as well as the adaptability to the requirements of car loading, warehousing, and ship stowage. Palletized shipments appeared to hold excellent opportunities for improving the efficiency of cargo handling and for reducing loss and damage. The method could not be used indiscriminately, however, and depots within the United States agreed not to ship any supplies as palletized unit loads unless the item had been approved for palletizing or the particular shipment had first been cleared with the Transportation Corps.

Because of the increased amount of supplies moving overseas by air, the Transportation Corps detailed air freight regulating officers to the major ports of aerial embarkation. These officers looked after the expediting and tracing of ASF shipments, assisted in identifying shipments, inspected packing, and handled the receipt and distribution of shipping documents.

As of 30 June 1945, there were 1,537 vessels in Army service. Of these, 261 were troop ships including 30 hospital ships, while the remaining were cargo vessels. These ships were owned or chartered by the Army or allocated to it for one voyage or longer. The total capacity of this fleet was 14,584,000 measurement tons. The average cargo capacity of the cargo vessels was 10,600 measurement tons while the troop ships had an average capacity of nearly 2,000 passengers. Many cargo ships carried some troops, and most troop ships carried some cargo.

Up to March 1945, the larger proportion of ships in Army service was employed in the Atlantic, but beginning in April the balance turned sharply in favor of the Pacific. As of the end of June, 68 percent of all ships were employed in the Pacific and 32 percent in the Atlantic. Fifty-eight percent of troop ships and 70 percent of cargo vessels were devoted to Pacific traffic at the end of the fiscal year.

The amount of actual transportation work obtained from the vessels in Army service depended upon the distance traversed, and even more upon the rapidity with which cargo was discharged overseas. The general trend of the time spent in American ports by vessels in Army service was downward. In April 1945, the average time of such ships in American ports was 15.1 days, only 9.2 of which were days under Army control and only 6.6 days of which were available for loading. In the 6 months from February to July 1944, the average was 19 days spent in American ports, of which 11.2 days were under Army control.

The time which vessels spent in oversea ports was subject to many influences which were difficult to appraise and more difficult to control. The Chief of Transportation made comparative studies of this time and submitted the results to oversea commanders. These studies together with constructive suggestions given to oversea theaters produced good results. The number of Army ships held in the European Theater of Operations for more than 10 days in a discharge port reached a peak of 293 on 23 October 1944. The delay in obtaining ports to support military operations resulted in this great backlog. Tremendous amounts of cargo converged on the

Continent from the United Kingdom as well as from the United States. Many vessels had been commodity loaded and served at times as depots. Supplies were taken from them as needed by forward troops. An inadequate number of depots after the rapid movement of troops across northern France helped to complicate the situation. With the assistance of personnel from the Transportation Corps, the European Theater began careful control of shipping to synchronize cargo arrival with supply lines on the Continent. The opening of the port of Antwerp greatly expanded unloading capacity. By January, the number of ships held for more than 10 days in a discharge port was reduced to 66. In the week ending 2 June, there were no ships which had been held for more than 10 days in a discharge port by the European Theater.

In the meantime, the number of ships held waiting discharge in the Southwest Pacific began to increase. The shifting of the combat area from New Guinea to the Philippines, and the lack of adequate port and storage facilities on Leyte and then on Luzon created a difficult transportation and supply problem for the Southwest Pacific Area. Vessels were held for some time awaiting discharge; as in ETO, cargo ships became floating depots. Immediately after the landings on Leyte, the number of ships held in the Southwest Pacific Area beyond 30 days from time of arrival was 50. Thereafter, instructions were issued by the Joint Chiefs of Staff ordering the discontinuance of the practice of partially unloading vessels and holding them pending disposition of the remainder of the cargo. On 1 January 1945, there were 65 ships which had been held for more than 10 days in a discharge port. A week later, however, this was reduced drastically to 18. There was an increase in February to 48. On 30 June 1945, there were only 14 ships which had been held for more than 10 days at a discharge port in the Southwest Pacific.

As port capacities increased overseas, the time required for a cargo vessel to make a round trip from the United States and back decreased. The biggest transportation problem of the Army Service Forces at the end of the year was unloading capacity in the Pacific. Cargo shipping schedules depended upon the ability of various Pacific bases to discharge the loads.

During 1945, the number of small boats in Army service increased from some 11,000 to 12,300. Most of the addition resulted from new construction, although some used vessels were also acquired. An effort was made to dispose of the older boats of commercial design which were obtained in the early stages of the war and to replace them with new and more economical craft. The problem of moving harbor craft from the Atlantic to the Pacific was carefully planned. Tug boats over 100 feet long were expected to make the passage under their own power, while smaller tugs and other craft were to be shipped as deck cargo.

The program for conversion of ships to new uses was practically finished during the year. Ten hospital ship conversions were completed as planned in 1944. In addition, five other conversions were added to the program. The conversion of over 200 Liberty ships and 100 Victory ships for use as troop carriers during redeployment was undertaken at the request of the War Department by the War Shipping Administration. Five marine repair ships for the repair of

floating equipment were completed during the year. Six other Liberty ships were converted into floating repair shops for use by the Army Air Forces. Seven port repair ships were completed, providing a total of ten such vessels for use by the Corps of Engineers in rebuilding overseas ports. Five 210-foot steel barges and three 265-foot concrete barges were converted during the year into floating refrigeration plants with facilities for storing perishable foodstuffs and for manufacturing ice cream. Three fast freighters were converted into refrigerator ships. Other conversions of vessels during the year included 17 self-propelled concrete barges transformed into floating warehouses, four steel craft transformed into floating maintenance shops for the Corps of Engineers, 14 steel barges transformed into supply depots for the Army Air Forces, and two concrete barges made into maintenance shops for the Ordnance Department.

The list of Army ports of embarkation was altered during the year by the closing out of the subport at Mobile. Eight ports of embarkation were in operation at the end of the year—Boston, New York, Hampton Roads, Charleston, New Orleans, Los Angeles, San Francisco, and Seattle. In addition, the three cargo ports at Baltimore, Philadelphia, and Searsport, Maine, and two subports—Portland, Oregon, and Prince Rupert, British Columbia—continued in operation.

Labor shortages became an acute problem on the Pacific Coast. In the last 6 months, 18 additional port companies, and two additional service companies, were assigned to the Pacific Coast for longshore and general freight handling work. This brought the total American troops assigned to west coast port operations to 26 port companies and 14 service companies. In addition, Italian Service Units and German prisoners of war were extensively employed.

The Transportation Corps gave particular attention in 1945 to improving food service in staging areas and on oversea vessels. Camp food service supervisors were assigned to each staging area; a central mess detachment was installed to control and operate all messes. Special menus were provided for soldiers returning from overseas. Improved standards of messing were also worked out for troop trains in the United States.

Ship Losses In the European War

Total troop and cargo losses in the war against Germany and Italy were officially announced in June 1945. For the period from 8 December 1941 to 9 May 1945, a total of 3,604 American soldiers were lost at sea, out of 4.4 million men shipped across the Atlantic. Only 1,094 soldiers were lost actually crossing the Atlantic, or 24 out of every 100,000. The others were aboard ships which were sunk while moving soldiers from a base to a combat area, as from North Africa to Sicily or England to France.

In six sinkings, 100 or more soldiers lost their lives. The largest loss occurred when the British troop ship RHONA was sunk off Algeria on 26 November 1943, after an air attack. Of 1,981 American military personnel on board, 1,015 were lost. Another 764 soldiers were lost when a Belgian troop ship controlled by the British, the LEOPOLDVILLE, was torpedoed off Cherbourg on 24 December 1944. The American Liberty ship PAUL HAMILTON was sunk by an aerial torpedo off Algiers on 20 April 1944 with the loss of 504

officers and men. Four hundred and four soldiers were lost when the DORCHESTER, another American vessel, was torpedoed near Greenland on 3 February 1943. One LST was sunk with the loss of 314 American troops, and another with 126 men. There were two other sinkings with a loss of 86 and 51 soldiers each. After a collision of an American troop ship with a French aircraft carrier on duty with the Navy, 68 officers and enlisted men were missing. Both ships proceeded to the Azores for repair. A cargo vessel was torpedoed or mined in the English Channel en route to Normandy on 29 June 1944. The ship was towed in by a tug and beached near Southampton, but 76 American soldiers were lost. There were 31 other sinkings or accidents in which troop losses of from 1 to 20 men occurred; in 24 of the incidents the losses were 10 men or less.

Cargo losses in the Atlantic came to 537,656 measurement tons, or the equivalent of 54 fully loaded Liberty ships. A total of 105 vessels was lost and 10 damaged. Army supplies lost amounted to 0.76 percent of the entire tonnage shipped, or 76 out of each 10,000 measurement tons going overseas.

Domestic Transportation

The movement of War Department passengers in groups of 40 or more declined 18 percent in the fiscal year 1945 from the fiscal year 1944. The total number of passengers moved in 1945 came to 8,130,000, of whom all but 264,000 were moved by rail. The remainder moved by bus. The small number of troops remaining in the United States for training explained the decline in passenger movements. Altogether, some 34,200 "main" numbers were issued by Transportation Corps. Each represented a party for which a special train or special cars were furnished. The authority of the Transportation Corps to schedule troop movements in accordance with availability of equipment made it possible to provide over 15,000 additional sleeping car runs accommodating more than 500,000 men who otherwise would have had to make overnight trips in coaches.

When the Transportation Corps program as established on 30 June 1945, was completed, the War Department owned 2,400 sleeping cars, 800 kitchen cars, 320 hospital cars, and 60 medical kitchen cars for service on American railways. This Army equipment was used to supplement that owned by the railways.

There were 44 Army Reservation Bureaus in operation throughout the United States at the end of the year. These bureaus had 48 branches in principal railway stations. They assisted War Department personnel in obtaining accommodations on sleeping cars and reserved seat coaches. During the fiscal year these bureaus received more than 3,100,000 requests for reservations and were able to obtain accommodations in all but 3.2 percent of the requests. The number of requests received was more than twice the number handled in the preceding year. In the last half of the year three bureaus on the Pacific Coast expanded their service to include Navy personnel, and the bureaus themselves came under the management of joint Army-Navy committees.

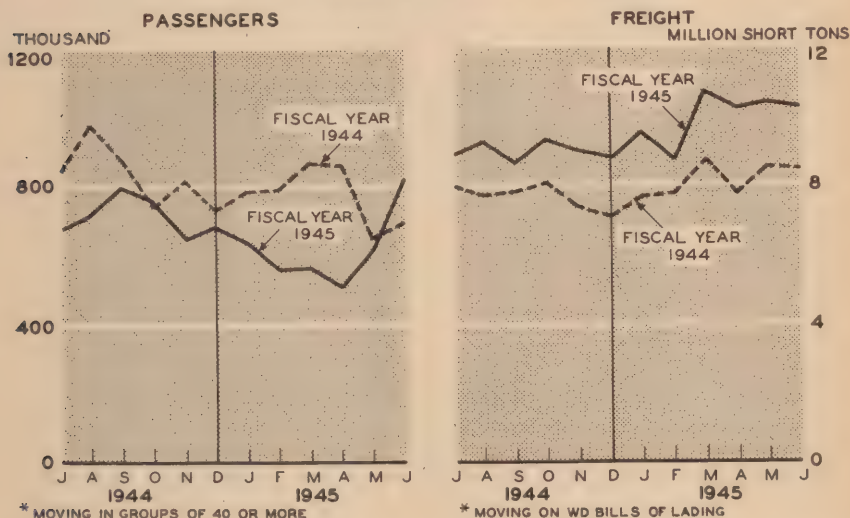
During the year a reduced railroad fare of 1¼ cents per mile was obtained for military personnel who were discharged, retired, or released from active duty. This placed discharged or released personnel

on the same basis as military personnel receiving furloughs. Arrangements were also made for the railroads to move military personnel going on furlough in organized groups of 40 or more on special cars.

The volume of Army freight shipped by commercial carrier was 21 percent greater than in 1944. Altogether, the Transportation Corps issued 276,600 domestic route orders covering nearly 2 million carloads of freight and 275,600 routings for export freight covering 1,500,000 carloads. The total tons shipped on War Department bills of lading came to 117 million for the year. Nearly 105 million tons were carried by rail, 10 million tons by motor, and 1 million tons by water.

A critical freight car shortage developed during the winter of 1944-1945, primarily because of exceptionally severe snow and ice

ARMY TRAFFIC IN THE U.S.



in the northeastern part of the United States. Nevertheless, the Army suffered no serious delay in the movement of essential supplies. The embargoes which were placed on shipments into the affected areas excepted all military supplies, but the Army voluntarily reduced its domestic traffic in order to relieve the general situation. All outstanding route orders into the northeast were canceled and each shipment carefully reviewed before new routings were issued. About 70 percent of the special requests for shipments were eliminated until traffic conditions became more normal.

Increased effort was given during the year to speeding up the release of freight cars after loading and discharge operations were completed at Army installations. A study of 211 large posts, arsenals, and depots showed that during April 1945, 71 percent of the freight cars were released within 24 hours, an additional 22 percent within 48 hours, and only 7 percent held beyond 48 hours. The demurrage charges accruing in April amounted to only \$58,000 compared with \$76,000 in December 1944, and \$113,000 in the previous July.

The Army-Navy service consolidating less than carload shipments handled more than 1 million tons of consolidated freight during the year as against 685,000 tons in 1944. The volume of traffic at consolidating stations reached a monthly peak of 109,000 tons. The advantages anticipated when consolidating stations were first set up—more speedy deliveries, reduced freight charges, and better control of shipments en route—were fully realized. By the end of the fiscal year, the Navy was contributing one-third of the tonnage consolidated at these stations, while the War Department continued to manage all operations.

Rate studies exploring possible reductions in freight charges paid by the War Department were continued on a broadened scale. In 1945 negotiations were completed which brought about savings of 60 million dollars annually. Of this amount, about 35 million represented rate reductions negotiated with rail and motor carriers, and the remainder resulted from revised classification ratings applied to War Department items or decisions of the Interstate Commerce Commission.

By 30 June 1945, the Transportation Corps owned and operated 4,100 tank cars supplying petroleum products and acids to War Department posts and explosive plants. Because most tank cars in the United States were owned by commercial companies rather than by the railroads, the War Department had to obtain its own fleet. The number of cars increased about 900 during the year. Through careful scheduling and intensive utilization, the average daily mileage per car was increased to 75.3, compared with 39 in the fiscal year 1942.

The careful control of carload shipments to ports from inland origin points was intensified in 1945 to forestall any threat of congestion along the seaboard. Notwithstanding the increased volume of freight moving to the Pacific, the heavy and urgent shipments to Europe, and the severe weather conditions from December to February, all ports were free of congestion throughout the year. The control machinery proved its effectiveness under these difficult circumstances.

In previous years there was a tendency for large shipments of lend-lease supplies to accumulate near ports as a means of insuring that desired items would be available without delay whenever required for foreign loading. Some uncertainty in shipments by manufacturers, rapidly changing priorities established by foreign governments, and the impossibility of accurately forecasting ship arrivals accounted for this tendency. Nevertheless, large banks of supplies near ports occupying railway cars or warehouses were a constant threat to port fluidity. In the second half of the year, the Army insisted that these accumulations of supplies be reduced, particularly around New York. This was accomplished without seriously affecting lend-lease shipments and with considerable benefit to general port conditions.

The six regulating stations which help to control the flow of traffic to the Pacific coast had an especially large increase in activity during the year. When originally established in December 1941, these stations were expected to relieve the existing congestion of west coast ports. The increased capacity of the ports and the more effective control of shipments at source reduced the importance of the regulating stations. But the "car passing" reports which the regulating stations

provided ports in the west were valuable in enabling these installations to plan their work as well as to trace shipments. By the end of 1945, these regulating stations reported the passing of approximately 28,000 cars per week, compared with half that number in the beginning of 1943.

The increase of freight moving from Atlantic ports to depots and other stations within the United States after victory in Europe made it necessary to establish new machinery to control this traffic. Ports of embarkation and port agencies now request permits for individual shipments of Army freight in the same way that depots requested such permits for port-bound shipments.

During 1945, holding and reconsignment points and railroad open storage yards handled the largest tonnage in their history. The increase was 25 percent over the load of 1944. Total tonnages received and shipped came to nearly 8.5 million tons. These facilities relieved ports from any threatened pressure of oversea freight. Lend-lease supplies marked for oversea shipment but held awaiting the availability of ship space, and stock piles of major items held until required by the Army, were shunted to a holding and reconsignment point or to a railroad open storage yard. During the past year, a new type of shipment was handled when urgent theater requisitions far exceeded shipping capacities. These shipments originated at manufacturers' plants or at inland depots for early but undetermined movement overseas. They were not unloaded at depots near ports because of their limited capacity or because of reporting and accounting difficulties. The Transportation Corps intransit storage facilities were well adapted to handling these supplies and their use made cargo planning easier and saved many rush shipments from inland points.

During the late months of 1944, a portion of the space at the Elmira Holding and Reconsignment Point was set aside and designated as the Northeast Equipment Staging Area. This area handled the equipment for the heavy troop movements then leaving New York and Boston. Under normal procedure the organizational equipment of these units would have been shipped from many different origin points directly to the ports for assembling and loading. Because of the volume, a different arrangement was necessary in order to relieve the already heavily burdened ports. Accordingly, the assembling of organizational equipment was performed at Elmira and the equipment was then moved to ports in full carloads as the ports were ready to load it. While this was the first operation of the kind and numerous problems arose, the important objective of relieving the load upon the ports was realized.

Holding and reconsignment points were expected to turn over all shipments every 60 days. Because of changing priorities and uncertainty in available shipping, this was not always accomplished. During 1945, a special drive was made to remove supplies which had been on hand in excess of 60 days, with the result that between 1 July 1944, and 30 June 1945, the quantity of such freight was reduced from 11,000 carloads to 3,500 carloads. The latter figure was less than 13 percent of the total freight on hand at holding and reconsignment points.

In addition to handling Army and lend-lease freight awaiting export, holding and reconsignment points stored some Transportation Corps supplies and also handled relatively small quantities for the Treasury

Department, the Navy Department, the Maritime Commission, and the British Ministry of Supply Mission. Continued improvement was made in space utilization and handling methods. Between June 1944 and April 1945, the tons handled per man-day for receiving and shipping labor increased from 13 to 16 tons. Improvements in packing and crating largely accounted for this better performance.

By May 1945, there were 48 railroad open storage yards operated by railroads under contract with the Transportation Corps. These facilities supplemented the work of holding and reconsignment points.

The Transportation Corps assisted common carriers in meeting the severe problems which the war has imposed upon them. Through careful studies of present and prospective requirements, particularly for the movement of traffic to and within ports, potential bottlenecks were pointed out to various carriers. As a result, certain transcontinental railways took steps to increase their line haul capacities, while both the railways and the Army shared in a program to increase the storage tracks serving ports of embarkation. The Transportation Corps also examined certain projects for structural improvement as a basis for recommending allocation of critical materials and equipment priorities to the railways. Close relationships have been maintained with the Office of Defense Transportation and the Association of American Railroads. Labor shortages were an acute operating problem for common carriers throughout the year. Working with the U. S. Employment Service and Selective Service Boards, the Transportation Corps was able to bring many skilled workmen into the service of the carriers, including men recently discharged from the armed forces. Railroads were also assisted in obtaining federal housing for employees at stations where poor housing conditions encouraged a high rate of labor turn-over.

Since extraordinary quantities of ammunition and explosives were moved by the railways during the year, special attention was given to expediting these shipments and to enforcing safety regulations. As many shipments as possible moved directly from loading plants to shipside, thus hastening delivery and reducing the number of handlings. There were no explosions while handling ammunition.

The Transportation Corps also assisted motor carriers in their operations when it was clear that these would substantially benefit the movement of War Department traffic. In 1945 forty commercial and contract carriers were assisted in obtaining new vehicles and 147 were helped in obtaining new equipment, replacement parts, tires, gasoline, or additional operating authority. Some 568 highway improvement projects originated by state authorities were reviewed by the Transportation Corps. In ten cases the War Production Board asked the War Department to review the military necessity for proposed road improvements and in two of these the Transportation Corps recommended accomplishment of the project. Studies of military needs and requirements for highways were also made for the use of the Public Roads Administration.

Careful control was continued over all railroad rolling stock allocated to Army installations. At the end of the year there were 1,476 locomotives, 322 locomotive cranes, 8,274 cars, and 759 pieces of maintenance-of-way equipment in use by the Army. The employ-

ment of this equipment was regularly checked to determine that it was being efficiently utilized. Surveys completed during the year resulted in 60 locomotives being declared excess; recommendations were made to reduce the number of crews in 61 instances and the size of crew complements in 140 instances. These recommendations involved a savings of nearly a million dollars a year in labor expense. Four railroad repair shops were maintained for rail equipment owned by the War Department. Only one proposal for the construction of new railroad facilities within the Army was approved during the year.

At the end of the fiscal year 1945, the pool of Army-owned buses numbered 7,498 vehicles. Of the total, 1,599 were allocated for service in industrial communities, 5,536 were allocated to Army installations, and 363 were held in reserve. During the past year, 2,431 new buses were added to the pool. A continuing check was made to insure that these buses were employed where the need was greatest and where commercial operators were unable to provide the required service. During the year some 2,600 buses previously allocated were withdrawn for allocation elsewhere. Bus service was either operated directly by Army posts or under contract with Army-provided equipment.

Redeployment

The biggest transportation problem of the year was the completion of plans for the shift of troops to the Pacific. Beginning in October, each oversea shipment from an Army depot or contractor was marked either SHP (ship) or STO (stop). The first marking indicated that the freight would be required in Europe regardless of the cessation of hostilities, while the latter showed that the freight should be diverted upon announcement of redeployment. So far as possible, the two classes of freight were shipped in separate cars so that prompt action could be taken without the confusion and delay involved in breaking up carload lots. The plan further provided that, upon notification from the ASF, individual railroads would stop all shipments en route to Atlantic and Gulf ports except subsistence, would report the cars to the Transportation Corps in Washington, and would hold them until notified about disposition. Ports of embarkation were instructed to report by courier all STO cars on their tracks and all STO cargo in port storage or at holding and reconsignment points. A control room was established in The Pentagon for use by representatives of the ASF technical services and of the Army Air Forces who would determine the disposition of the STO cargo. These representatives were provided with special telephone connections with their major field installations. Several tests of these preparations were made before V-E Day in order to insure that the plans were complete and that they were fully understood.

Two events assisted the smooth operation of the advance arrangements. After the failure of the German offensive in the Ardennes, the outcome of the war in Europe was sufficiently clear to permit both the European Theater and the Mediterranean Theater of Operations to cancel requisitions for some supplies. Then, by the first of May, the complete collapse of all German resistance was so apparent that a gradual cut-off of shipments became possible.

On 2 May, a stop and hold order was issued to the railroads on

ammunition and explosives destined for the Mediterranean Theater of Operations. On 3 May, the issuance of new permits for shipments to Atlantic and Gulf ports was suspended. On 5 May, the railroads were asked to stop and hold and to place a full embargo on all Army shipments to east coast ports. On the morning of 6 May, 2 days before V-E Day and 6 days before the War Department placed all redeployment plans into effect, the disposition of STO cargo began. By 10 May, disposition orders had been furnished on a total of 7,112 cars, of which 1,668 were being held by the railroads and 5,444 were reported by ports. After the completion of this initial step in redeployment, the Association of American Railroads expressed to the Chief of Transportation its appreciation of the manner in which the change-over in the flow of Army freight had been planned and executed.

The loading of vessels at east coast ports was also reviewed on 2 May. A radio was dispatched to the Mediterranean Theater that same day requesting advice about the disposition of ships en route to or already arrived in that area. On 5 May, a similar communication was sent to the European Theater of Operations. Definite action on the disposition of ships for the Mediterranean Theater was taken on 4 May and on ships for the European Theater on 9 May. A total of 369 cargo vessels were affected. Of this number, 234 loading in the United States or already at sea were permitted to proceed without change. Eight ships which were loading at eastern seaports were partially discharged and reloaded with different cargo for their original destinations. Seventy six ships which were fully loaded or at sea were ordered discharged in the United States. Fifty-one ships were directed to proceed to the Pacific Theater to unload their cargoes.

The movement of troops to the European and Mediterranean Theaters had been so greatly reduced during the weeks before the end of the war in Europe that there was no problem in the readjustment of this traffic. There were no units en route to ports of embarkation on R Day, 12 May 1945. About two trainloads of troops were moved out of staging areas in order to free these facilities for the accommodation of the men returning from Europe. The relatively few troops which were at sea on V-E Day were permitted to continue to their original destination.

The stoppage of traffic en route to Europe was only the first step in redeployment. The more important and continuing job was to shift men and supplies from Europe to the Pacific and to bring others back to the United States for assignment to duty in this country or for discharge. The designation of units to go directly to the Pacific and of units to go to the Pacific through the United States was made by the War Department. All supplies were to move directly from Europe to the Pacific. About 60 percent of total troop strength going to the Pacific was to return to the United States first. The job of moving both men and supplies fell to the Transportation Corps.

The immediate return of a large number of troops from Europe required prompt action in preparation to handle them. The staging areas through which the outflow had been handled were now directed to handle the inflow. Each staging area designated one part of the post as a disposition center to handle those being returned for reassignment or discharge in the United States. Another part of the staging area was called a redeployment area for handling troop units going

to the Pacific through the United States. In neither case were any new facilities required but only some readjustment in the activities of the staging areas. Five staging areas were expected to handle the bulk of the traffic. These were Camp Miles Standish near Boston; Camp Shanks, Camp Kilmer, and Fort Hamilton near New York; and Camp Patrick Henry near Hampton Roads. A disposition center and redeployment area were also established at the New Orleans Port of Embarkation. As troops came into ports of embarkation they were moved immediately from shipside to one of these staging areas. At disposition centers men might be held from 24 to 48 hours, but at redeployment areas the time limit was 24 hours. The processing consisted primarily of examining unit and individual military records to be sure that they were in order and of insuring that the men's uniforms were in good condition and presentable for their travel home. At both disposition centers and redeployment areas, the men were divided into reception-station groups for movement by rail. Once the men had arrived at a reception station, the transportation phase of their return home was ended.

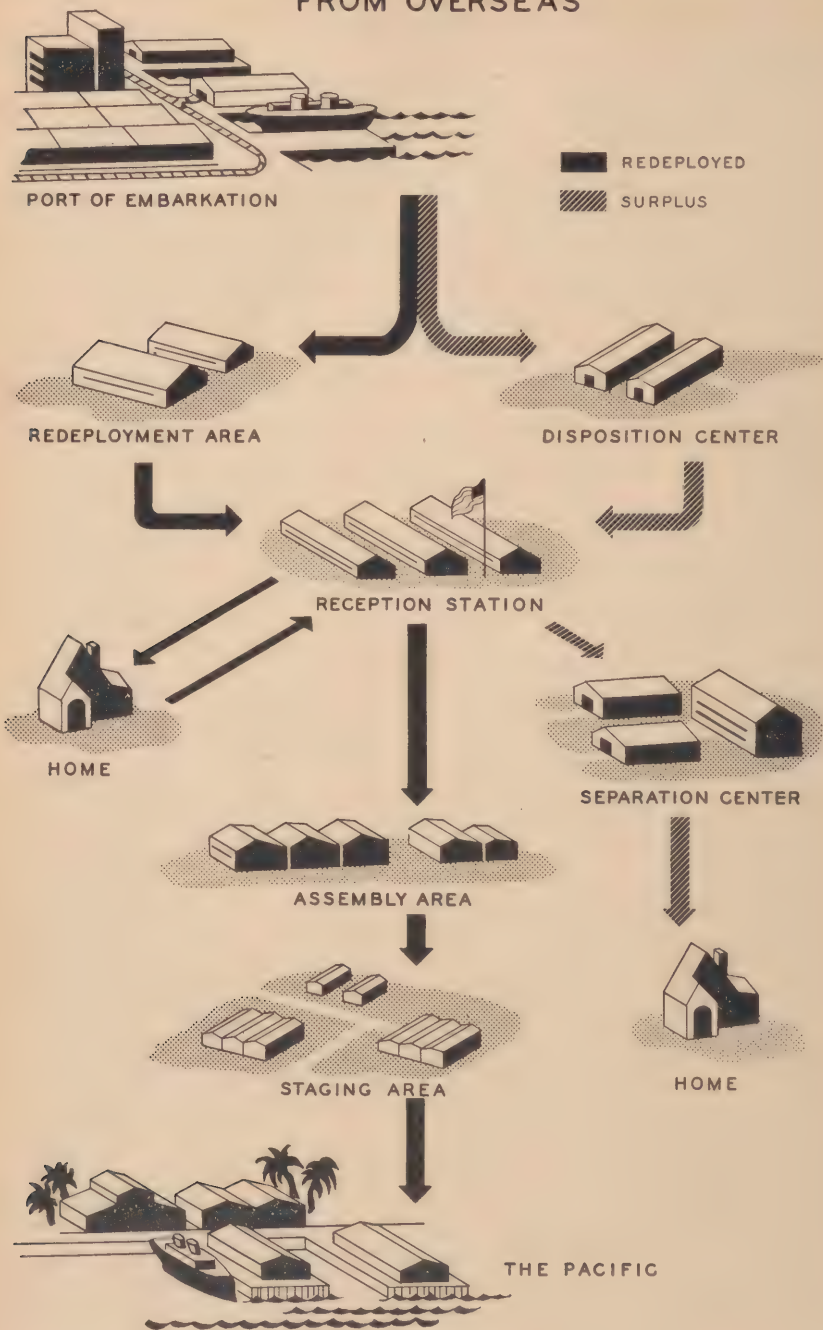
The redeployment program called for the movement of more than 3 million men from Europe in less than 12 months. This meant realizing a monthly peak of troop movements to and from theaters 50 percent larger than any attained before V-E Day. In the largest single month, more than 370,000 men were to be landed in the United States from Europe. This was greater than the record of 342,000 troops returned after World War I when there was no Pacific war to win. To realize these movement goals, troop-movement capacity had to be considerably expanded. In addition, arrangements were made to supplement American vessels by as many British and other ships as possible. The troop carrying capacity of over 200 converted Liberty ships was increased from 350 to 550. In addition, 100 Victory ships were converted to accommodate 1,500 passengers each.

In order that shipping capacity might be used to the fullest in hauling active soldiers, the return of patients to the United States was speeded up several months in advance of Germany's surrender. All sick and wounded in Europe requiring protracted medical care were to be back in the United States by 31 July 1945. In May, 45,500 patients were brought back to the United States out of a total of 170,000 troops and other passengers debarked at American ports. In June, 34,000 patients were brought back out of a total of 273,700 troops and other passengers debarked at ports. Nineteen of the Army's 23 hospital ships in service were assigned to the Atlantic. Altogether, 292,000 patients had been brought back to the United States from all oversea theaters by the end of the fiscal year.

Each port of embarkation established a new unit to operate on a 24-hour basis, keeping in constant touch with each incoming ship. This unit reported with the greatest possible exactness the arrival of each ship so that railroad equipment would be ready for the movement from shipside to staging area and then from staging area to the reception station nearest the home of the various soldiers.

The return of so large a military force in such a short period of time, and the several movements required within the United States before redeployment was completed, placed a tremendous burden upon the already taxed transportation facilities of the United States. There

FLOW OF REDEPLOYED AND SURPLUS PERSONNEL FROM OVERSEAS



was first a movement from shipside to staging area. This was a short movement, easily arranged. From the staging area, however, men had to be shipped all over the country to the vicinity of their homes. After a 30-day stay at home, those men being redeployed had to be gathered again at reception stations and then moved to an assembly area where the unit began its redeployment training. If all the training was conducted at the assembly point, the unit still had one further move to make—from training area to a west coast port of embarkation for shipment to the Pacific.

The best method of handling this traffic was carefully considered and the decision made that, so far as possible, returning troops should move in the United States in organized groups. It was clear that soldiers could not be properly accommodated on regular passenger trains if permitted to travel as individuals. By traveling in groups soldiers could be placed on special trains of coach and Pullman equipment. The movements could also be spaced in this way to make better use of available accommodations. Organized travel also simplified the handling of such other details as ticketing, routing, and discipline. Accordingly, both redeployed troops and soldiers for reassignment or discharge were moved from staging areas to reception stations nearest their homes in organized groups.

Because of the increased difficulty which the railroads were experiencing in handling passenger movements, the Transportation Corps in 1943 supported a project to have the Defense Plant Corporation build 1,200 troop sleepers and 400 kitchen cars for leasing to the railways. The cars were designed along very simple lines so that they used less strategic materials than would have been required for tourist or standard sleepers. Complete delivery of these cars was scheduled before December 1945. Peak movements of troops in the United States were expected to occur in the 4 months from November 1945, through February 1946, when 1.5 million men would be moved each month in organized groups. This was 50 percent larger military traffic than occurred during the previous peak movements in the fiscal year 1944. VJ-day reduced the expected peak to 1.1 million.

Special attention was also given to increasing the capacity of west coast ports for more than a year before VE-day. Both troop staging areas and warehouse and open storage capacities were enlarged. Additional railway sidings at ports were constructed, partly by the Army and partly by the railroads. The transcontinental lines took many steps to eliminate bottlenecks and to increase their capacity to handle west-bound freight. While the port of San Francisco was able to unload only 300 carloads of export freight a day immediately after Pearl Harbor, it was unloading as many as 1,200 cars in a single day toward the end of the fiscal year 1945. Despite the increased capacity all along the Pacific Coast, the railroads and ports were still unable to handle the entire volume of traffic to the Pacific. Accordingly, arrangements were made to use Atlantic ports and Gulf ports to supplement the west coast ports in shipping military supplies to the Pacific.

Since the Navy was also a large shipper to the Pacific, careful cooperation between the two departments became more necessary than ever before. A joint supply and shipping conference was held in Washington the first week in May 1945, at which many common

problems were discussed and certain lines of common action formulated. Because of basic differences in the two systems of supply and transportation, a complete dovetailing of shipping practices was impossible.

The redeployment job had only begun by 30 June 1945. The arrangements for handling the job had been completed. By the end of May, 90,000 passengers had been brought back from Europe to the United States. In June, the number increased to 259,000, while another 34,000 soldiers were shipped directly to the Pacific. From 12 May to 30 June 1945 some 890,000 measurement tons of cargo were returned to the United States, and 292,000 tons were shipped directly to the Pacific. The full burden of the job was still ahead.

Chapter 4. INTERNATIONAL AID

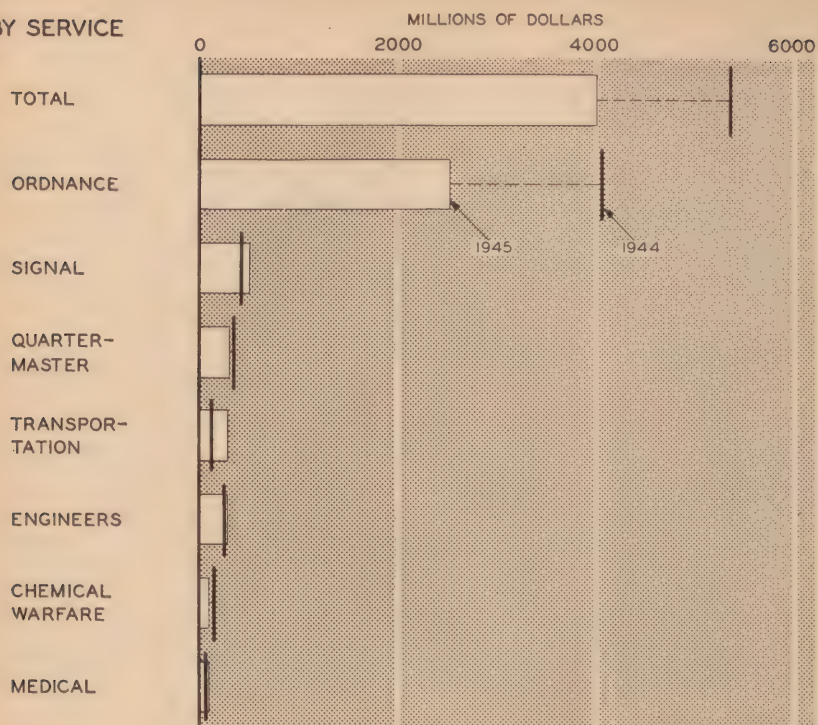
The military supply resources of this country were of major assistance in the support of many other forces besides the Army of the United States. In addition to the equipment and other items made available to the United Kingdom and Russia, the ASF by VE-day was providing supplies for some 2 million soldiers of other nations. Thus the United States was able to add effectively to its own military strength through assistance given to others under terms of the Lend-Lease Act.

During the fiscal year 1945, total transfers by the ASF to other nations amounted to 4 billion dollars, about 1.3 billion dollars less than in the preceding year. Of the 4 billion dollar total transfers, 2.3 went to the United Kingdom and 1.4 billion to the U. S. S. R. The next three largest recipients in order were China, France, and Brazil. By type of matériel, Ordnance equipment and supplies constituted the bulk of all transfers as measured by dollar value, amounting to 2.5 billion of the 4 billion total. Signal equipment came to about half a billion dollars, Quartermaster supplies to about 300 million dollars, and Transportation also to about 300 million dollars. Engineer supplies totaled some 250 million dollars.

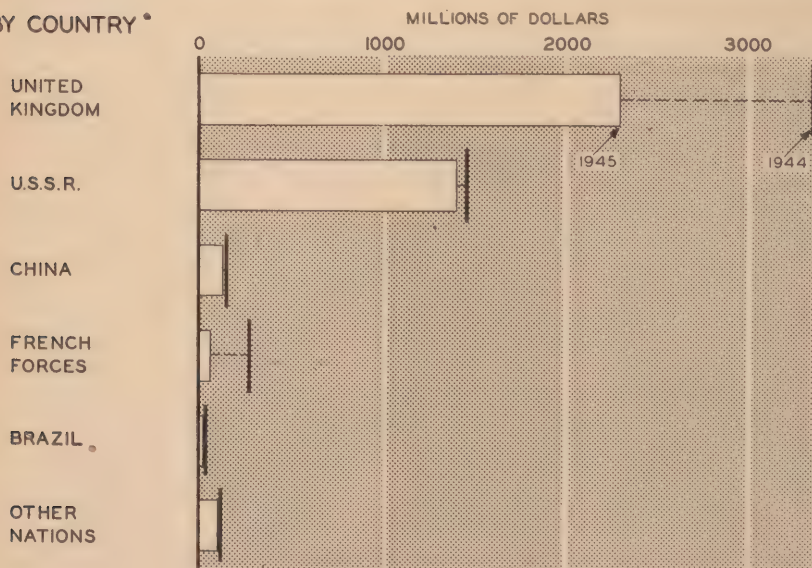
To illustrate further the volume of lend-lease transfers, a few specific quantities may be mentioned. Among other things, the United Kingdom in 1945 received 7,700 caliber .50 machine guns, 600 light tanks, 1,900 medium tanks, 2,600 personnel carriers, 37,000 jeeps, 4,000 10-ton trucks, 234 million rounds of caliber .50 ammunition, 1,300,000 antitank grenades, 6,200 microphones, 2,300 walkie-talkies and over 6,600 handie-talkies, 68,000 flashlights, 44,000 cable assemblies, 27,000 telephones, 48,400 miles of field wire, 2,200 portable fabricated barracks, 570,000 pairs of wool gloves, 204,000 jackets, 55 million square feet of airplane landing mats, 4,500 boxcars, and 3.7 million pounds of DDT. To the U. S. S. R. were assigned such items as 1,800 medium tanks, 7,000 weapon carriers, 39,000 1½-ton trucks, 77,000 2½-ton trucks, 400 10-ton trucks, 9,500 motorcycles, 10,000 telephones, 500 cranes and shovels, 335 road graders, 128 million feet of blasting fuze, 46 million square feet of airplane landing mat, 2,500 crawler type tractors, 100,000 wool blankets, 1,500 hospital ward tents, 6,800 flat cars, and 1,300 steam locomotives. In completing French rearmament, the items of equipment assigned in 1945 included 30,000 flashlights, 38,000 pairs of wool gloves, 26,000 wool blankets, and 16,000 carbines. To China went 107,000 Springfield rifles, over 600 81-mm mortars, and 92 75-mm pack howitzers, 1,600 jeeps, 4,000 2½-ton trucks, 2,600 1-ton trailers, 222 million rounds of caliber .30 ammunition, 2 million hand grenades, and 1,600 mine detector sets. These are only examples of Army Service Forces matériel provided others of the United Nations.

ASF LEND-LEASE TRANSFERS

BY SERVICE



BY COUNTRY *



The major aspects of lend-lease activity within the Army Service Forces continued to be the review of military equipment needs by other nations and the assignment of available output in accordance with strategic decisions. A forecast of lend-lease needs was essential in order to include desired items as far as possible in the ASF procurement program. In reviewing these needs such considerations as American productive capacity, raw materials supply, and our military requirements were governing, as well as available shipping capacity to move the supplies assigned to other nations. Different procedures were used to determine lend-lease requirements in the case of each major recipient of assistance. Demands were of two kinds—for standard items of American military equipment, and for “noncommon” items, that is, items which had specifications peculiar to the requesting nation. Procurement of these latter items was not begun until a supporting requisition with full specifications was submitted, analyzed by the appropriate technical service, and approved for production by the ASF.

In the middle of the fiscal year international aid requirements were added to the supply control system as another demand for each item to be considered in adjusting supply and procurement plans. Otherwise, there was no essential change in the methods previously established for handling lend-lease demands.

The available stocks in storage and from production each month were reviewed by the International Division and the technical services of the ASF, meeting with representatives of the requesting nations. Assignments were then recommended to the Munitions Assignments Committee (Ground) of the Munitions Assignment Board. As far as possible, assignments in 1945 followed approved programs for military assistance to other countries.

The United Kingdom submitted revised estimates of its military requirements for the calendar years 1945 and 1946 to the War Department on 15 June 1944. These were reviewed and as approved were incorporated into the Army Supply Program 1 October 1944. These requirements were then carried into the Supply Control System with changes from time to time as requested by the British. Requirements for the Union of Soviet Socialist Republics continued to be set forth in a protocol signed by the governments of the two nations. Requirements were submitted to a Soviet Protocol Committee established by the President and studied by the Army Service Forces. Recommendations were made to the Committee and requirements were then embodied in an agreement signed by representatives of the United States and the U. S. S. R. The approved requirements for military equipment were incorporated in the Army Supply Program and procurement was started. The ASF scheduled delivery periods for shipment of the material. The fourth protocol period coincided with the fiscal year 1945. After VE-day the protocol was terminated by the President, but supplies were still sent to Russia for use against Japan. The commitments under this protocol totaled approximately 2 million tons, as against some 1,500,000 tons under the third protocol. For the most part, the 1945 program was made up of types of items which had been sent to Russia under previous agreements. These included tractors, radio sets, cranes of all types, shoes, mobile construction equipment, and medical supplies. Large

quantities of transportation and communications equipment were required to enable the Soviet armies to reestablish transportation lines through the devastated area rewon from Nazi occupation. Port equipment to facilitate the unloading of lend-lease supplies in the Black Sea was also sent during the fourth protocol period.

Chinese military requirements were determined in the first instance by the staff of the U. S. Army Commander in the China Theater. Certain Chinese troops were sponsored by the United States and received almost their entire equipment from this country. In addition, military supplies for other Chinese troops were presented from time to time by representatives of China with recommendations from the theater commander. During the fiscal year 1945 several important changes were made in the handling of both types of requirements. The needs for Chinese troops sponsored by the United States were computed for the first time on the basis of regular Tables of Organization and Equipment. These tables were approved by the War Department General Staff in August 1944, and were changed from time to time thereafter. This established a definite program for U. S. equipment of 39 Chinese divisions with supporting troops. Other Chinese troops were reorganized by the Chinese Government and the system of supplying them was improved. Requirements for these units were reviewed by the Chinese Government's production board for possible local production before they were recommended for supply from the United States.

Prior to August 1944 all requirements for United States sponsored troops were handled through the machinery of the Munitions Assignment Board. By December 1944, in a series of actions, the Board authorized the supply of all items except initial issue equipment and certain types of fuel through regular Army supply channels. Chinese requirements were thus included in the supply requirements of the U. S. Army Forces in China. In January 1945 American food was issued to supplement the rations of Chinese troops. With the opening of the Ledo Road greater quantities of supplies could be sent into China. By 30 June 1945 about 98 percent of the initial issue equipment to American-sponsored Chinese units had been assigned.

The re-equipment of a French expeditionary force in North Africa was completed at the beginning of the fiscal year. This force, as the French First Army, participated in the invasion of Southern France on 15 August 1944, and then became a part of the U. S. Sixth Army Group fighting alongside the American Seventh Army at the southern end of the German line. One armored division of the French expeditionary force took part in the Normandy Invasion and was the first to enter Paris. Throughout these operations, the French troops received all necessary supplies through Army channels under lend-lease arrangement. By Christmas the liberation of France and the re-establishment of a national government made it possible for France to contribute additional troops to the war effort. The Joint Chiefs of Staff directed that a second French army of eight divisions with supporting troops be equipped from the United States to reinforce the existing armies on the western front. From January through April 1945, heavy shipments of equipment were made under this so-called second French rearmament program. All assignments were to be completed by 31 July 1945. The entire program was stopped with

VE-day and much of the equipment already in France was made available for the use of American forces in the Pacific.

The largest recipient of lend-lease assistance among Latin-American nations was Brazil. A Brazilian expeditionary force made up an important part of the Fifth Army fighting in Italy. The supply of these troops together with communications equipment for an air force and certain other supplies was provided from American sources. The approved requirements of other Latin-American republics were relatively small. Among the supplies provided Mexico was equipment for training and outfitting a Mexican fighter squadron now taking an active part in operations in the Pacific.

The liberation of the Philippine Islands brought with it a program for the organization and equipment of a Philippine army to be organized along lines similar to that of the Army of the United States. The initial equipment of this force was projected for completion by 31 December 1945.

Procedures were instituted during the year whereby all supply requirements for British and Indian forces in India and Burma were reviewed by the American commanding general of that theater who submitted recommendations to the Munitions Assignments Committee (Ground). While some delays resulted from this procedure at the beginning of the year, they have been eliminated by June 1945. Before assignments were made to any Latin-American republic, bids were submitted to the Commanding General of the Caribbean Defense Command to determine whether the items could be met from American supplies in the area. This was done to conserve shipping space and to make the maximum use of any excess theater stocks. This practice was also begun in other areas where there was some indication that lend-lease supplies could be provided from American stocks already overseas.

VE-day Adjustments

In October 1944, a special mission from the British War Office presented British supply requirements for a one-front war which, for planning purposes, were incorporated, after review, into the U. S. supply requirements which would become effective upon the defeat of Germany. Additional studies were made of the British requirements in subsequent months and by agreement a number of reductions were made. As a result, British lend-lease requirements for a one-front war were officially incorporated into the procurement program inaugurated just before VE-day. Shipments to the United Kingdom above the requirements of a one-front war were halted immediately upon VE-day for review. Actually, it was found necessary to stop the shipment only of a few items. The flow of supplies to lend-lease governments continued in the first 2 months after VE-day on the basis of needs for the war against Japan. A clogging of transportation facilities was thus avoided. The volume of lend-lease transfers during the war with Japan was expected to be reduced sizeably. The general policy for lend-lease during this period, as in the past, depended upon decisions of the Joint Chiefs of Staff. The role of the Army Service Forces was to carry out these decisions. On the whole, production and transfers in the fiscal year 1946 were expected to be 50 percent or more under the volume in 1945. Requirements for

such items as tanks, trucks, weapons, and ammunition would decline to a minimum, while requirements for clothing and specialized equipment adapted to Pacific warfare would remain sizeable.

Backlogs

Considerable attention was given during the year to the reduction of backlogs of equipment assigned to other nations but not shipped. In many cases, particularly those of the United Kingdom and the U. S. S. R., the shipment of lend-lease supplies was a responsibility of the recipient country. After munitions were assigned, shipping schedules were established by the requesting country. Oftentimes, lend-lease supplies were held in holding and reconsignment points and at ports of embarkation for a considerable time before actual shipment.

As of 1 July 1944, there was a 2.3 months' backlog of unshipped assignments of ASF items in the United States. This ranged from nearly 3.5 months' backlog for engineer supplies to a 1.8 months' backlog for quartermaster supplies. By recipient, the backlog varied from 12.6 months' unshipped assignments for China to 1.3 months' unshipped assignments to Canada. The United Kingdom had a backlog of approximately 2 months and the U. S. S. R. a backlog of about 3 months. Ten months later, by 30 April 1945, these backlogs had been substantially reduced. As of that date, only 1.4 months' assignments remained unshipped. For only two technical services—the Medical Department and the Quartermaster Corps—was there more than a 2 months' backlog, and in these cases it was still under 3 months. For the United Kingdom the backlog had been reduced to 1.6 months, and for the U. S. S. R. to 1.3 months.

Repossessions

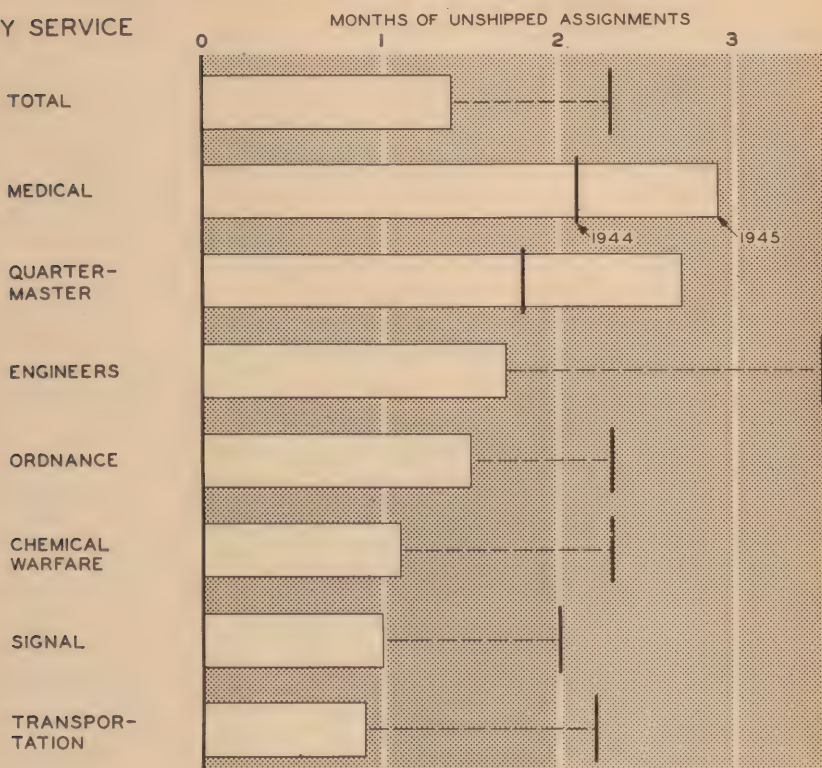
Under the provisions of section VIII, ASF Circular 43, 1944, lend-lease matériel held for more than 60 days at ports and holding and reconsignment points was to be reported to the Munitions Assignment Board for repossession.

In most cases, the Munitions Assignment Board granted the foreign government 30 days in which to float this material. If action had not been taken in this period, the supplies were cleared from the port areas and returned to depot stocks. In the 10 months from 1 July 1944 to 30 April 1945, some 122,000 short tons of supplies consigned to the United Kingdom were reported by ports and holding and reconsignment points as held for more than 60 days. Only 5,000 tons were actually repossessed and delivered to depots. The remainder was floated by the United Kingdom. During the same 10 months, some 103,000 tons of lend-lease matériel consigned to the U. S. S. R. was reported by ports and holding and reconsignment points; in this instance, likewise, some 5,000 tons were returned to depots and the remainder floated by the Soviet Government.

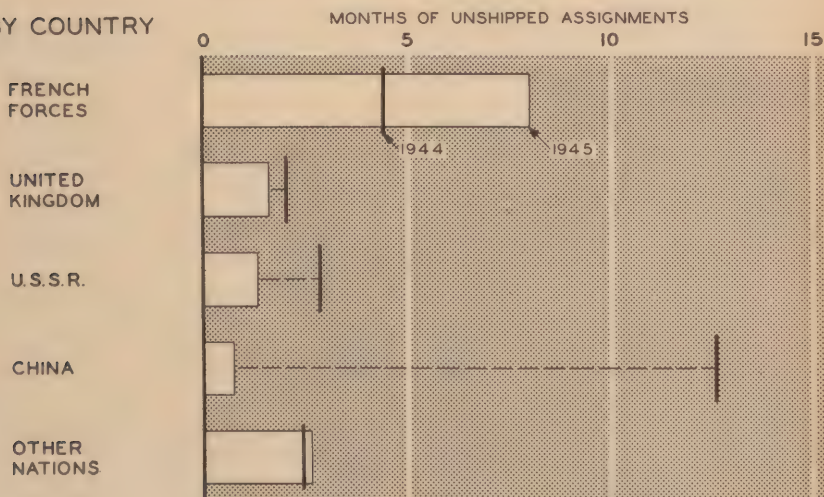
The Munitions Assignments Committee (Ground) authorized technical services to repossess any lend-lease matériel which a foreign government indicated was no longer desired after actual assignment but before shipment. In the 11 months from 1 July 1944 to 30 May 1945, the ASF repossessed some 34 million dollars worth of equipment from the U. S. S. R. under this arrangement and some 5 million dollars worth of equipment from the United Kingdom. The largest propor-

CURTAILMENT IN BACKLOG OF ASF LEND-LEASE ASSIGNMENTS

BY SERVICE



BY COUNTRY



tion of this total was some 25 million dollars worth of ordnance equipment which was no longer needed by the Soviet Government. The next largest category was transportation equipment which the U. S. S. R. did not desire.

Reciprocal Aid

During the fiscal year 1945 the United States continued to receive substantial amounts of reciprocal aid or reverse lend-lease. On a cumulative basis to 31 December 1944 the supplies, services, and facilities provided U. S. forces by foreign nations were estimated to total about 4.6 billion dollars. This included 3.4 billion dollars worth of supplies and services from the United Kingdom and the British Colonial Empire, 721 million dollars worth of supplies and services from Australia, 427 million dollars from India, and 178 million dollars from New Zealand. In addition, France, Belgium, and the Netherlands also supplied reciprocal aid. Reports as of 30 June 1945 indicated that for the first 6 months of the fiscal year reciprocal aid from foreign governments to the U. S. amounted to 1.4 billion dollars. During the last 6 months of the year the figure would be somewhat smaller as a result of the conclusion of hostilities in Europe.

As American forces entered France, Belgium, Holland, and Luxembourg during the year, local procurement of military supplies was begun on a large scale. Many plants previously used by the Germans were able to begin production within a short time. Textiles, railway equipment, fuel, lumber, tires, spare parts, and other items were thus obtained. In addition to requisitions made by the United States Army upon foreign government departments, supplies were also purchased directly, as in France, with funds provided by the French Government. Actual cash procurement was kept at an absolute minimum. A long term production program was instituted to produce a wide variety of items required by the American Army. Certain critical raw materials in short supply in the United States were exported from France under reciprocal aid.

In September 1944 the ASF instituted action to obtain itemized prices from the United Kingdom on reciprocal aid furnished the United States. A joint letter from the Secretaries of War and the Navy was addressed to the Secretary of State, 4 October 1944, requesting that the British be asked to furnish price information on vouchers covering reciprocal aid transfers and to provide more detailed statements of services. Shortly thereafter a mission composed of representatives of the Foreign Economic Administration and of the Army Service Forces went to London to arrange for obtaining pricing information. An investigation was made of the British system of estimating the value of reciprocal aid which was fully described in a report made by the Foreign Economic Administration. The British agreed to place prices on all vouchers when they possessed the pricing information at the time of transfer. They also agreed to reply to specific inquiries about prices on designated items or services.

Since this arrangement did not entirely provide the Army Service Forces with full information on prices and supporting detail as a basis for building up a reasonably complete and accurate reciprocal aid account, the European Theater of Operations was requested to make complete estimates of the value of reciprocal aid made available from

the British. Other theaters were already required to take this type of action. The first full report of values and quantities received by the European Theater of Operations was to be completed with data up to 30 June 1945.

The State Department established during the year that foreign governments had the same right over reciprocal aid property as the United States retained in the case of lend-lease property. Accordingly, it was necessary to obtain the consent of the owning government before transferring any reciprocal aid property to another government or before converting it to a nonmilitary use. Special arrangements were made with the United Kingdom in September 1944 on the procedures which the American Army would follow in diverting reciprocal aid property.

Since other governments had a right to request the return of reciprocal aid property which had not been lost, consumed, or destroyed, a cable was dispatched to oversea theaters on 9 August 1944, requiring them to offer reciprocal aid property back to foreign governments after War Department clearance. In accordance with policy established by the Foreign Economic Administration, War Department instructions were issued on 15 December 1944, establishing detailed procedures for recording and reporting reciprocal aid property returned to foreign governments or otherwise disposed of. This required oversea theaters to describe the condition and to estimate the value of reciprocal aid property at the time of return. By the end of the year, a large number of installations in England, such as depots and barracks, had been returned to the British Government. Similar returns were under way in France.

In February, 1945, the Fiscal Director in ASF Headquarters was made responsible for accounting and reporting all reciprocal aid. The International Division continued to establish the policies and procedures for all such transactions while the detailed financial records were maintained by the Fiscal Director.

Special agreements were made with France and the Netherlands for the payment of claims by foreign nationals against United States forces under reciprocal aid. A similar agreement was being negotiated with Belgium at the end of the year.

Civilian Supply

During the fiscal year 1945, the plans made in the previous year for the civilian supply of Europe were put into effect. Starting with deliveries of about 120,000 short tons for the month of July 1944 (excluding petroleum products), the United States share of supplies for civilian populations of liberated and occupied areas grew to some 1 million short tons in June 1945. Thereafter, the volume of shipments by the Army was expected to continue through August and then to decline sharply.

Military responsibility for civilian needs continued to be limited to those supplies required to prevent disease and unrest which would interfere with military operations. In keeping with the emergency character of this responsibility, the supplies furnished were restricted in general to the basic requirements of food, fuel, medical and sanitary items, and clothing. In addition, military authorities undertook the responsibility for emergency repairs of essential utilities, such a

electricity and gas plants, water, sewage, and transportation systems. Limited quantities of agricultural and industrial supplies and equipment were provided mainly to increase local production of commodities which otherwise would have to be imported from the United States.

All quantities within approved categories of supply were also held within strict limits. Food for the liberated areas of Europe was based upon the amount necessary to supplement local resources in providing an average per capita daily intake of about 2,000 calories. The 2,000-calorie average diet at the same time was established as a ceiling for distribution of foodstuffs, in order to insure full and frugal use of local supplies and to reduce the import burden.

Civilian supply for Europe and the Mediterranean areas continued on a combined basis, the United Kingdom and Canada joining the United States in meeting the military responsibility for such supplies.

The Combined Civil Affairs Supply Subcommittee of the Combined Chiefs of Staff under the chairmanship of the Director of the International Division, ASF, not only directed the basic planning of civilian supply but also reviewed the actual theater programs of requirements and requisitions. It also allocated procurement responsibility between the United Kingdom, the United States, and Canada. Theater requisitions were filled in accordance with these decisions. The Army Service Forces assisted the American members of the Combined Civil Affairs Supply Subcommittee in the screening and review of requirements from the theater and presented advance estimates of minimum requirements for each area of United States interest. The Army Service Forces supplied the detailed information necessary for this screening and review and advised on such matters as supply availability and transportation capacity. The actual procurement of the United States share of the supplies was undertaken by the ASF and associated Government agencies.

For certain civilian supply operations, the War Department procured and shipped commodities with funds provided by the Foreign Economic Administration. In some cases, supplies procured by FEA with its funds were shipped and distributed by the Army. Such FEA funds were used mainly in connection with supplies for the Balkans and Italy.

Shortages of shipping, port, warehouse, and inland transportation facilities in many cases induced by battle and bombing destruction, presented severe problems to military authorities in meeting civilian needs. Critical shortages in world supply of such items as fats and edible oils, coal, textiles and cotton cloth, trucks, tires, and spare parts presented further problems, as well as the difficulty of handling civilian supplies through crowded transportation facilities.

During the fiscal year, the United States' share of civilian supply shipments to areas of combined responsibility exclusive of petroleum products came to about 4.5 million short tons. These shipments consisted principally of foodstuffs, mainly wheat and flour. Of May and June shipments, 77 percent was food, mostly wheat and flour. Coal constituted 18 percent, agricultural supplies 2 percent, clothing and textiles, 1 percent, and medical and others 2 percent. Of the total tonnage of the United States' share of civilian supply to combined areas, a little more than half went to the European Theater and the rest to the Mediterranean.

In 1945, civilian supply shipments were made by the Army to the Pacific for the first time. Unlike Europe, the Pacific is not an area of combined civilian supply responsibility. During the year, the United States military, without the aid of other countries, was responsible for meeting the basic civilian requirements of the Philippines in support of operations in that area. The planning of this program was completed early in the year, procurement started, and supplies forwarded to the theater commander as requested. The United States Army also undertook to procure and furnish supplies for a portion of the Netherlands East Indies. Shipments to the Philippines and the Netherlands East Indies commenced in November 1944. During the fiscal year these shipments, exclusive of petroleum products, were 168,000 short tons for the Philippines and 6,000 short tons for the Netherlands East Indies. Shipping, port, warehousing, and transportation difficulties in the Pacific were similar to those encountered in Europe.

Judge Samuel I. Rosenman, in his report to the President after an extensive investigation of conditions in northwest Europe, summarized the results achieved by the Army as follows:

"On 10 November 1943, the initial responsibility was placed upon the military to provide for such civilian supplies as were needed in the liberated countries of Northwest Europe to prevent disease and unrest.

"This responsibility has been met; there has been no widespread disease or unrest.

"In view of the many limitations of shipping, supply, harbor facilities and inland transportation, the job has been well done."

For planning purposes, the period of military responsibility for civilian supply was assumed in each case to be 6 months, with modifications for assault operations. In the case of Italy, it was necessary to extend the period beyond 6 months because of the need for protecting lines of communication as the operation moved slowly northward. In the areas of northwest Europe, where operations moved more rapidly and the national governments were stronger and better able to take over the responsibility, the period assumed for planning proved to be more nearly accurate. Thus, in France the French National Government, using civilian agencies to assist in its procurement, took over responsibility for supply of all civilians on 1 May 1945, except that responsibility for coal and petroleum was transferred on 1 September 1945. In the other liberated areas of northwest Europe, military responsibility for civilian supply terminated early in the new fiscal year 1946. Military responsibility in Italy ended about the same time. Responsibility for distribution of civilian supplies in Greece and Yugoslavia was turned over to UNRRA on 1 April and 15 April, respectively, with military authorities scheduled to continue the deliveries of certain items up to 1 July 1945.

Thus it was expected that early in the fiscal year 1946, the military responsibility for civilian supply would have ended in all of Europe with the exception of the areas in Germany and Austria occupied by the American military forces. The responsibility in these areas was a most restricted one. Apart from providing for displaced nationals of the United Nations, it was designed to protect the troops occupying such areas by preventing the spread of disease, pestilence,

famine, and civil unrest. The quantities and numbers of items expected to be imported were considerably more limited than in liberated areas. The food issue to Germany was limited almost entirely to the needs of displaced persons and to small quantities of wheat for the rest of the population. Apart from displaced persons, the average per capita diet was expected to be substantially lower than that planned for liberated areas. By Presidential directive, military responsibility for supplying Germany and Austria was extended to cover all requirements to meet American policy.

In the Pacific, also, the Army was endeavoring to terminate military responsibility at the earliest practical date. Arrangements were being completed at the end of the year to end military responsibility in the Philippines in the next few months. The Foreign Economic Administration advised that it was planning to take over the responsibility so far as supplies could be placed in regular trade channels, while the Philippine Commonwealth Government would assume responsibility for care of indigent persons.

Chapter 5. MEDICAL SERVICES

The Medical Department's task in providing care and treatment for sick and wounded personnel during the fiscal year 1945, far exceeded that of any previous period. As a result of the large scale land operations in Europe and the increasing tempo of operations in the Pacific, the patient load in oversea hospitals increased rapidly. By December 1944, the total number of patients overseas was double the number remaining at the end of the previous fiscal year. This load continued to rise beyond that date to an average load in February 1945 equivalent to 225 percent of the June 1944 figure. Concurrently, by reason of the evacuation of the more serious cases of disease and wounds, the patient load in the United States increased steadily, and rapidly after September 1944, to the extent that the average load in June 1945, in this country was just over twice the load at the start of the fiscal year.

More than 2,681,000 Army persons were admitted to hospitals overseas during the fiscal year 1945, and 1,737,000 Army persons were admitted to hospitals in continental United States, making a total of over 4,418,000 patients treated in U. S. Army hospitals. In addition, 1,210,000 cases were treated in dispensaries or by confinement to quarters, and some 42,000,000 outpatient treatments were given to personnel who were not excused from duty. Medical service was rendered also to certain civilians of the War Department, dependents of service personnel, and prisoners of war. In certain theaters care of the indigenous civilians or allied military personnel became a major problem.

The average Army patient load overseas during the entire fiscal year 1945 was 233,500 patients, equivalent to nearly 223 percent of the average load in the previous fiscal year, 104,900 patients. The number of patients under treatment overseas increased from 134,100 during June 1944 to a peak in excess of 300,000 at the end of January 1945. Thereafter, increases in the rate at which patients were evacuated to the United States were more than sufficient to offset the rate of new admissions to oversea hospitals. The first major increase in the volume of returning patients occurred in December, for which month the number of evacuees was more than double the average of the preceding 5 months. The peak volume of patients was returned during May, the month of victory in Europe. Thus, at the close of the fiscal year the oversea Army patient load had dropped to 180,000 patients.

The medical problem in Europe was augmented by the requirements for care and treatment of German prisoners of war during the entire campaign. At 30 April 1945, 25,000 prisoner patients were being treated either in Army hospitals or special units created for that purpose. Following the overrun of Das Vaterland, U. S. Army Medical Department personnel became responsible under the "stay-

put" policy for the professional and administrative supervision of more than 450,000 patients among enemy prisoners, recovered allied military personnel and displaced persons.

The hospital bed authorization for the Asiatic theaters allowed for the provision of 6,120 beds for 102,000 Chinese military personnel. Approximately one-third of all fixed and mobile beds occupied in China and India-Burma were occupied by Chinese patients.

During the 12-month period ended 30 June 1945, more than 365,000 Army patients were evacuated from overseas to the United States for further treatment, as compared with just over 98,000 the year before. The steady increase in the volume of returning patients which became more pronounced after November 1944 more than offset the decline in the number of hospital admissions resulting from the movement of troopsoverseas. Army patients undertreatment in the United States increased from 143,000 during June 1944 to more than 303,000 at the end of the fiscal year. The average number of patients for the entire year was 204,600, which is 20,500 more patients than the average for the fiscal year 1944. Thus, in the aggregate, the average patient load both in the United States and overseas during the fiscal year 1945 exceeded that of the previous year by nearly 150,000 patients, an increase of 52 percent.

Hospital Administration in the United States

The great flow of patients from overseas to the United States necessitated several adjustments in the Army's hospital system. In the month of May 1945, nearly 57,000 patients were brought back to this country, as compared with only 9,800 returned during June 1944. For several months the use of large transports including the British "Queens" made it possible to return 2,000 to 3,000 patients in each Atlantic crossing. In total, more than two-thirds of all evacuees were returned in troop transports. However, evacuation by hospital ship was greatly increased. Nearly 63,000 patients were returned in hospital ships during the fiscal year 1945, a four-fold increase from the 14,600 patients so returned in the previous year. Air evacuation also became increasingly important; the Air Transport Command brought in over 72,000 Army patients during the year—over 10,000 per month in May and June 1945.

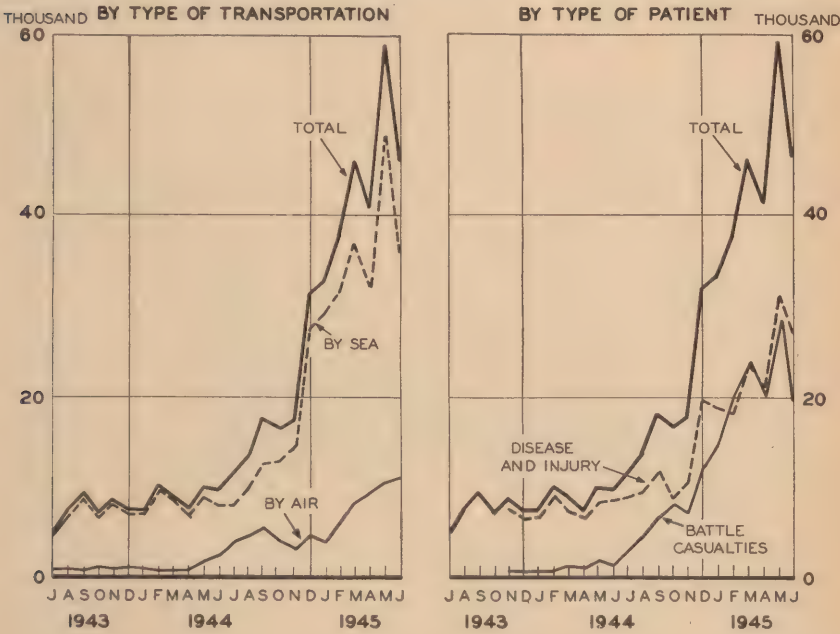
To receive the huge number of oversea patients, debarkation hospitals were increased both in number and capacity. Station and general hospitals near ports of entry were partially or wholly converted to this function, until at the end of the year there were over 13,000 debarkation beds in 8 hospitals on the Atlantic coast; there were 5,000 beds in 8 hospitals on the Pacific coast for receiving the oversea sick and wounded.

From debarkation points, patients were moved by air or rail to general or convalescent hospitals. Hospitalization as close as possible to the patients' homes was continued as far as possible. All facilities had to be used to their capacity, however, and patients requiring specialized treatment were sent to the hospital providing the particular care needed. Of approximately 360,000 patients moved within the United States, 80,000 went by air and the others by rail.

Medical Department rail equipment was improved and augmented during the year. In June 1944, there were 40 kitchen cars and 120

ward and ward dressing cars. During the year, 20 more kitchen cars were procured, buffet kitchens were installed in all of the ward and ward dressing cars, and 142 new type hospital cars were added. This new type unit car, built according to Army specifications, was ice-cooled, equipped with buffet kitchen, had small compartments for doctor and nurse, and 36 patient spaces arranged in triple-decker beds. With 58 additional unit cars scheduled for delivery by August 1945, the total hospital train equipment would then consist of 60 kitchen cars and 320 patient-carrying cars, with a maximum bed capacity of

ARMY PATIENTS EVACUATED FROM OVERSEAS



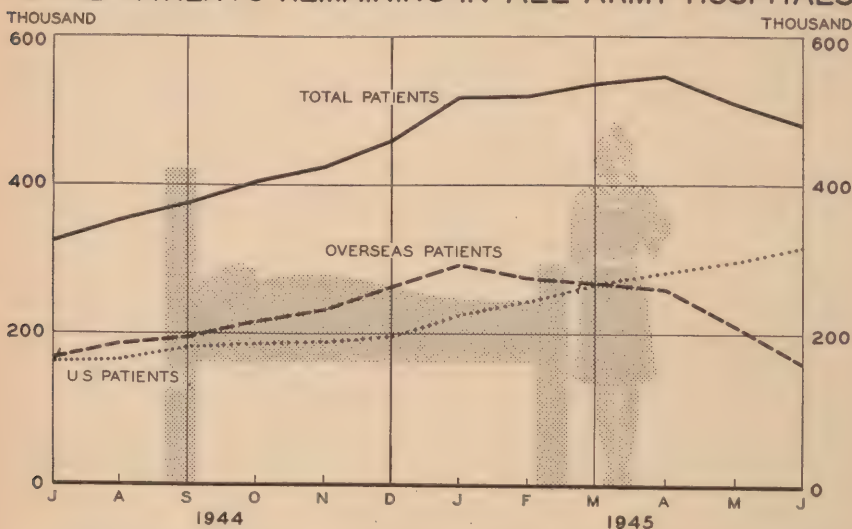
nearly 11,000. It continued to be necessary, however, to supplement Army-owned equipment with privately-owned dining and sleeping cars.

An oversea patient was transported to one of 65 general hospitals for definitive medical or surgical treatment, or to one of 13 ASF and 12 AAF convalescent hospitals for reconditioning prior to discharge or return to duty. By June 1945, the total capacity of general hospitals was approximately 165,000; that of ASF convalescent hospitals, approximately 50,000. In general hospitals, the actual occupancy of beds during the year averaged above 75 percent, while in numerous instances the number of registered patients exceeded authorized capacity. The granting of convalescent leaves and furloughs to thousands of patients permitted hospitals to carry their load. Moreover, the 13 ASF convalescent hospitals, some of which accommodated 6,000 patients, released general hospital beds for more serious medical and surgical cases.

The practice of having individual general hospitals specialize in a particular type of care was continued. By 30 June 1945, the 65 general hospitals had 78 units for specialized treatment, as follows: arthritis, 2; rheumatic fever, 3; tuberculosis, 2; neurosyphilis, 7; neurology and neurosurgery, 19; tropical diseases, 2; trench foot, 3; thoracic surgery, 5; amputations, 7; plastic and ophthalmologic surgery, 9; vascular surgery, 3; blind, 2; deaf, 3; deep X-ray therapy, 8; and radium therapy, 3.

Two general hospitals were designated exclusively for German prisoners of war and were staffed almost entirely with enemy medical officers and men. With the increased probability of post VE-day return of German patients to their homeland, one of three hospitals was reconverted for treatment of American sick and wounded. One hospital center remained for the exclusive care of prisoners of war.

TOTAL PATIENTS REMAINING IN ALL ARMY HOSPITALS



Although no construction of new general hospitals was authorized after 1943, the number of general and convalescent hospital beds added during the first 6 months of the fiscal year 1945 amounted to 80 percent of the number of such beds provided during the 4 preceding years. During the fiscal year, 5 new general hospitals were activated. Nine general hospitals were combined with an equal number of convalescent hospitals to form hospital centers, each with a patient capacity of from 7,000 to 10,000. The approximate doubling of capacity during the year was achieved by converting hotels, station hospitals, and entire camps and airfields to general or convalescent hospital use, by changing barracks and other buildings into wards or clinics, and by erecting a few new buildings. Much construction activity was devoted to improving such facilities as gymnasiums, outdoor playing fields, public address systems, libraries, theaters, and swimming pools. The installation of nurses' call systems and air-conditioning equipment increased patient comfort.

The amount of station hospital care, provided on the basis of 3 percent of command strength, decreased as the military program passed from mobilization to actual combat. Several station hospitals were absorbed into the general and convalescent hospital system, while others were inactivated along with the camps they served. By 30 June 1945, the ASF was operating 135 station and 26 regional hospitals with a total bed capacity exceeding 73,000.

The regional hospital system established in the previous year proved capable of handling all but a very small part of the medical need for military personnel on duty in the United States. The more serious medical and surgical patients who were formerly transferred from station to general hospitals were now sent to regional-station hospitals. The general hospitals were reserved for the care of sick and wounded from overseas.

Reconditioning

By 30 June 1945, there were over 200,000 patients in the Army's reconditioning program in the United States. Reconditioning was a medically prescribed training program. It was planned convalescent care dedicated to restoring and maintaining physical and mental potentialities during hospitalization. Although the benefits of some form of reconditioning were originally extended to all patients in the convalescent stage, the previous emphasis was upon preparation for a return to duty. Reconditioning disabled individuals no longer capable of performing any military duty was considered the concern of the Veterans Administration and allied agencies.

In December 1944, the President of the United States instructed the Secretary of War that the military authorities were responsible for rehabilitating all disabled returned soldiers, "to insure that no overseas casualty is discharged from the armed forces until he has received the maximum benefits of hospitalization and convalescent facilities which must include physical and psychological rehabilitation, vocational guidance, prevocational training, and resocialization." In order to comply with this order, convalescent hospitals were established. Reconditioning then assumed the additional duty of preparing convalescent patients for a successful return to civilian life—a policy shift with far-reaching effects. Accordingly, reconditioning expanded and improved its services in all dimensions. The superior programs and the enhanced professional quality of reconditioning activities resulted, in great measure, from the training courses prescribed for officers and enlisted personnel conducting the program. There were more occupational therapists available after training, and WAC enlisted personnel were trained as assistants in occupational therapy. Moreover, the publication of training manuals and of a training film further advanced the program. In July, a monthly Reconditioning News Letter was inaugurated.

Station, regional, and general, as well as convalescent hospitals received equipment and supplies for the reconditioning program. Even hospital ships provided a regular reconditioning service for patients in transit. Convalescent training overseas was also improved. In the European Theater of Operations, for example, 15 to 20 percent of total bed capacity during the year was devoted to advanced reconditioning. About 90 percent of the patients under the

program were returned to duty; this included 83.6 percent of the battle casualties receiving reconditioning training.

The Army was endeavoring at the end of the year to make sure that every oversea injured and wounded soldier received the maximum benefit possible not only from medical treatment but also from reconditioning training.

Operations Planning

Medical planning for future operations was focused on the Pacific in 1945. The approved plans for this, and all other oversea medical service, required that 80 percent of the beds in fixed hospitals be in general hospitals, leaving only 20 percent for station hospitals. General hospitals overseas were constructed in the area where they would be used in order to reduce long distance movement of patients within a theater. Since this was not always feasible, hospital ships or hospital facilities on troop ships were made available for the evacuation of the wounded and injured. Airplanes were also used for serious cases.

Every effort was made by The Surgeon General to insure that each type of medical unit overseas had the required equipment. Pacific operations also required careful preparations for insect and rodent control, general sanitation, and adequate supplies of potable water.

In October 1944 a restudy of requirements for fixed hospitals overseas was made on the basis of 20 months' experience. The Surgeon General recommended, and the Chief of Staff of the Army approved, fixed hospital capacity at the following percentage of total military strength: ETO and SWPA, 7 percent; MTO, 6.6 percent; and all other active theaters, 6 percent. The Alaskan Department, North American, and Latin American theaters were authorized 3 percent. These allowances included only the Table of Organization bed capacity which could be increased 50 percent by adding equipment expansion units without an increase of personnel.

Because of greater troop strengths and enlarged military activities, additional hospitals were required in the active theaters. Consequently, during the first 10 months of the fiscal year, 81 general hospitals, 8 station hospitals, and 35 field hospitals were shipped overseas. The shipment of units reached a peak in December 1944, when 66 embarked, almost 20 percent of the year's total. These shipments and reorganization in the theaters increased the bed capacity in fixed hospitals in the theaters by more than 100,000 beds, not including expansion capacities. The peak was reached in May 1945, when the beds in fixed hospitals amounted to 344,000. In addition, there were 87,000 beds in mobile hospitals, such as evacuation and field hospitals in the combat areas. The ETO, with the major part of the combat activity, had the greatest increase, the number of fixed normal beds expanding from 106,000 to over 200,000 and the beds in mobile hospitals from 23,000 to 58,000. Of the 1,176 medical units authorized for the ETO, all but one were in the theater on VE-day.

The normal beds in fixed hospitals in other theaters increased as follows: SWPA from 37,000 to 56,500; Pacific Ocean Area from 28,150 to 35,150; the India-Burma-China Theaters combined from 8,800 to 16,825; and the Middle East-African Theater from 1,275 to 1,600. There was a decrease in the normal beds in fixed hospitals in

the MTO from 45,625 to 28,000; in the Persian Gulf Command from 2,100 to 750; the Alaskan Department from 3,765 to 1,675; and the Latin American Theater from 3,175 to 2,575. All of these changes meant adjustments for the ASF in its medical personnel and training activities.

The large number of casualties in Europe in November and December and the incidence of trench foot so increased the number of hospital patients that by December the number of beds occupied in fixed hospitals on the continent and in the United Kingdom exceeded the capacity of the units in operation. The volume of patients returned to the United States failed to keep pace with admissions in the theater until February. In consequence, the heavy patient load persisted until the latter part of that month although the peak was reached on 31 January when patients occupying beds were equivalent to 114 percent of the capacity of the operating units. Sufficient beds were readily available and by reason of untiring effort of Medical Department personnel the Army's high standards of medical care were maintained. By 1 March, the number of patients had declined to just under the capacity of the hospital units, and by 30 June, the number of patients was less than 35 percent of the January peak.

During the late fall of 1944, the number of patient spaces available in ships returning from Europe exceeded the number of patients embarked by the theater. In consequence, the War Department issued instructions that maximum use be made of all hospital facilities aboard troop transports as well as those on hospital ships. This was to be accomplished by lowering the evacuation policy to 90 days if necessary. Later, to increase further the number of patients evacuated and to reduce the hospital load in Europe, the evacuation policy was changed in fact from 120 days to 90 days; that is, patients were returned to the United States when their probable stay in a hospital was estimated to be more than 90 days. On 1 May, when it became evident that VE-day would soon occur, the evacuation policy was further reduced to 60 days.

In the Mediterranean Theater of Operations, the military situation necessitated the movement of hospitals so that they might be nearer the combat area. Such movements necessarily denied the theater the use of the beds while the changes were taking place. As a result of these factors and of the increased combat activities, the number of beds available for new cases was rather low during the autumn months of 1944. By December, however, the situation was improved and was never critical thereafter.

In the Pacific, the major problems for the Medical Department, as for all the branches of the service, were terrain and distance. Because of the shortage of medical personnel and equipment arising from European needs, every possible economy was necessary. This was realized in part by combining hospital facilities, thereby reducing overhead personnel. This resulted, however, in greater distances from front lines to hospitals.

Redeployment

Long before the surrender of Germany, the basic policies and procedures for the physical examination of troops during redeployment were incorporated in general directives governing intertheater

movement. To simplify the over-all task, virtually identical procedures were prescribed both for those units scheduled for direct shipment to active theaters and those to be returned temporarily to the United States for rest and recuperation.

The physical and mental qualifications for oversea service, as set forth in the latest War Department circulars, were applied as the basic medical standards in the selection of personnel for redeployment. In considering physical fitness for further oversea service, however, due weight was also given to the manner in which the individual had performed his military duties. It was recognized by the War Department that removal of trained personnel for other than definitely disqualifying conditions would not only be a serious waste of military manpower and training, but would also be detrimental both to the morale of the individual and to the efficiency of his unit. Consequently, personnel who had performed their military duties satisfactorily, but who would originally be disqualified under the provisions of current circulars, were permitted to accompany their units unless they had defects which might be complicated or aggravated by further oversea duty.

To determine whether officer and enlisted personnel met the specified physical qualifications, a screening type physical examination was made of all individuals subject to redeployment. In addition to testing for visual and auditory acuity, a medical history was obtained on each individual. When necessary to confirm or refute physical or mental defects suspected as a result of the medical history, special examinations or laboratory analyses were performed. When possible, the medical and dental officers assigned or attached to the units being examined performed the examinations. In this way extended periods of observation of the individual's physical condition could be used to help interpret the physical findings. Final authority for rendering a decision on the fitness or unfitness of an individual for further oversea duty was vested in the unit medical officer.

By placing the responsibility for the performance of medical examinations on medical officers in the inactive theaters, the use of reception centers in the zone of interior for such physical processing was held to a minimum. The work load for medical installations in the United States, during redeployment, was also relieved in several other ways. Dental treatment necessary from a health and functional standpoint was provided to military personnel prior to their movement to this country. Remediable minor defects were corrected to the greatest extent possible prior to embarkation. Finally, of the total personnel found physically or mentally unfit for further oversea service, only those requiring hospitalization in the United States were evacuated as patients.

Medicine

Standards of medical care were maintained at the highest possible level throughout the Army. Well-qualified medical officers were assigned as consultants in medicine to theater and Army surgeons, as well as to service command surgeons in the United States. In addition, civilian consultants of national eminence in various medical specialties proved a most valuable asset. Their expert advice was

utilized to supplement the work of regularly assigned medical officers; the investigations which they carried out under Army auspices helped to solve some of the more perplexing clinical problems.

One important development of the year was a new method of administering penicillin to prolong its action in the blood stream. The drug disappeared from the blood in an hour or so when administered in water or saline solutions. Consequently, frequent or continuous injections were necessary in order to maintain sufficient concentrations to overcome invading bacteria. To surmount this difficulty, studies were undertaken at Walter Reed General Hospital in which penicillin was suspended in peanut oil and beeswax. By this means antibacterial levels of the drug were maintained in the blood stream as long as 20 hours after one intramuscular injection.

Continued efforts were made to prevent acceptance by the Army of individuals with active tuberculosis. Some 3,500 soldiers were discharged during the year because of tuberculosis.

The incidence of skin diseases increased in 1945. These diseases were particularly prevalent in the Pacific theaters and were one of the most important causes of evacuation. Penicillin was used in the treatment of certain skin diseases and experience indicated that it was useful in certain types of infection, particularly impetigo.

The high incidence of poliomyelitis in the civilian population throughout the winter and the unseasonal epidemic at Fort McClellan, Alabama, led to the decision that respirators of all types should be provided for Army use. One hundred were allotted to the Fourth, Seventh, Eighth, and Ninth Service Commands—those with the largest military population and relatively few large cities.

Two general hospitals (Moore and Harmon) were designated for the specialized treatment of patients with tropical diseases. Both of these hospitals were staffed with specially qualified officers and furnished with special equipment and supplies.

More precise knowledge was gained in 1945 about the usefulness and limitations of atabrine. Attacks of falciparum malaria were rare because of the curative power of this drug. Atabrine was shown to bring the symptoms and acute attacks of this type of malaria under rapid control. On the other hand, vivax malaria began to relapse about 30 days after a course of treatment; ultimately about 60 to 70 percent of the infections acquired in the Pacific reoccurred. Although certain untoward reactions were ascribed or attributed to the administration of atabrine, the military value of this drug outweighed the sum total of its known disadvantages. In the calendar year 1944, a total of 66 deaths in the Army were caused by malaria on the basis of preliminary data, against 106 in 1943.

Although efforts were continued to find an improved drug for use in malaria therapy, none was found which would cure vivax infections. One drug was found, however, which possessed important advantages over atabrine. It was still in the process of development in June 1945. Another drug, which was in all probability the equal of atabrine, was also investigated.

Both amoebic and bacillary dysentery were troublesome problems, especially in India-Burma and the Philippines. Reports showed that treatment for bacillary infections with sulfadiazine instead of sulfaguanidine was highly successful.

Since no special treatment was devised for scrub typhus, recommendations were made in detail for general medical and nursing care. Convalescence from this disease received special attention, since it was often unduly prolonged. It was shown in New Guinea that a large proportion of patients could be successfully returned to duty within 90 days. Rumors that chronic heart disease often results from scrub typhus were disproven. While a few patients had persistent after-effects, these were not permanent and were not serious enough to justify discharge of patients from service.

Epidemics of diphtheria occurred in the Western Pacific, India-Burma, and Mediterranean areas during the year. The problems of diagnosing and treating the disease received much attention. Approximately 5 to 6 hundred cases of cutaneous diphtheria were reported from the same area.

Preventive Medicine

Preventive medicine continued to play an important part in maintaining the Army's excellent health record. As in previous years, many investigations were carried forward on communicable disease problems existing in this country and overseas. The Army Epidemiological Board and its ten commissions, composed of more than 100 civilian consultants, investigated such problems as influenza, atypical pneumonia, streptococcal infections, diphtheria, infectious hepatitis, mumps, meningitis, dysentery, and various tropical diseases. Investigations on each of these diseases yielded much valuable knowledge of practical benefit to the Army; the scientific information was shared with civil and Federal agencies concerned with infectious diseases. As a result of the Board's studies, it was fairly well established that there was some relationship between poor sanitation and the spread of infectious hepatitis. Moreover, a component of human plasma was used with success in the prevention of the disease. These were important advances, since infectious hepatitis has been a troublesome problem in the Army. Another noteworthy contribution growing out of the Board's work was the development of a vaccine against Japanese B encephalitis.

As the war scene shifted to the Pacific, the vital importance of individual protective measures to be employed against tropical diseases was emphatically underscored. Troops in these theaters were exposed to many diseases against which there was no vaccine or other specific immunization. Prevention, therefore, depended to a large degree upon the individual soldier's knowledge and application of proper protective measures. To further this knowledge, a unit charged with developing a health education program for troops was established in January 1945. Films, posters, pamphlets, radio scripts, news stories, and other types of informational media were developed for the instruction of the soldier in order that he might protect himself against the ever-present hazards of the tropics.

More efficient delousing equipment was perfected during the year and placed in use at ten ports of embarkation. The use of DDT, however, kept infestation of troops at a low level.

An appraisal of chemical disinfectants led to the discontinuance of chlorine solution (used in footbaths) for the prevention of dermatophytosis of the feet. This agent was also shown to be relatively

ineffective for quick disinfection of mess gear, and emphasis was placed on the use of boiling water for this purpose. The increasing need, however, for disinfection of contaminated vegetables and fruits eaten uncooked was met by the use of chlorine solutions in which these foods could be immersed. Diarrhea rates were reduced as a result of the routine use of this agent. Continued application of previously adopted purification methods, resulted in a still further improvement in the quality of water supplied troops throughout the world.

The accelerated production of DDT made sufficient supplies available by January 1945, to allow full use in the Army's program for the control of mosquitoes, flies, bedbugs, fleas, and other insects directly or indirectly concerned in disease transmission. New uses for this potent insecticide were evolved and improved methods of application were introduced. Airplane dispersion of DDT, in the form of sprays and aerosol mists, proved an effective method of mosquito control over large areas.

Malaria rates were greatly reduced in oversea theaters through the use of DDT and the application of other control measures including malaria discipline and wider use of atabrine. On 30 June 1945, there were 48 malariologists, 82 malaria survey units, and 156 malaria control units on duty overseas.

Many changes in the venereal disease control program took place during 1945. Every effort was made to provide more effective methods of therapy and suitable educational materials. The introduction of penicillin was the most important recent advance in the Army's venereal disease treatment program. Gonorrhea could be cured by injections of penicillin administered during a single day. Very few of these patients required hospitalization, the treatment being completed on an ambulatory or duty status. Not much more than a year ago, gonorrhea presented one of the Army's most difficult treatment problems. Sulfathiozole, which was used at the time, was becoming less effective and large numbers of patients had to be hospitalized for prolonged periods to receive fever therapy, a type of treatment that was not without danger. When penicillin was made available in the fall of 1944, it was possible to discontinue fever therapy and relieve the Army's general hospitals of this rapidly growing treatment burden. The marked reduction in days lost because of venereal disease during the last year and a half (576 per 1,000 men per year in January 1944, and 278 in March 1945) was achieved by this new rapid treatment of gonorrhea.

After October 1944, most forms of syphilis were also treated with penicillin, the total treatment being administered in hospitals over a 7½-day period. Thereafter, the patients were given monthly clinical and serologic examination for a period of 1 year. This treatment was a tremendous improvement over the former 6 months' course of treatment. It saved the Army immeasurable hours of medical officers' time and markedly simplified the administrative handling of patients with syphilis.

A bill signed by the President in September 1944 repealed previous laws providing for loss of pay for time lost because of venereal disease. Punishment in connection with venereal disease thereafter was meted out only in cases involving concealment of infection.

The nutrition of military personnel and civilians under Army

jurisdiction demanded special attention during the year. As of 30 June 1945, there were 157 nutrition officers on duty in the zone of interior and in oversea theaters. Approximately 70 analyses were made of menus devised for feeding troops, patients on hospital ships, prisoners of war, and bomber crews. Studies of bomber crews on protracted missions revealed that these crews could be fed nutritious, warm diets while in flight, and that the efficiency of their operations was enhanced thereby. These diets did not differ materially from standard good feeding as practiced at sea level. Diets relatively high in carbohydrates were preferred to those with excessive amounts of protein.

Upon request of the Secretary of War, a study was made to improve food utilization in the Army with special emphasis upon reducing the use of critical food items. Changes were suggested in menu planning which would result in a saving of approximately 750,000 pounds of carcass meat as issued per day. It was believed that this could be done without lessening the proper amounts of nutrients in the ration.

Another study was begun of the problem of feeding front-line troops. Troops in the most advanced line were frequently unable to obtain hot food, although such food was important to the maintenance of health and morale. Nutrition officers and representatives of The Quartermaster General prepared to investigate this problem under combat conditions in the Pacific Theater. Several types of equipment and supplies will be used, including insulated containers in which food may be carried forward and two types of self-heating cans. Attention will also be given to equipment necessary for supplying hot foods and drinks at battalion aid stations.

A Medical Nutrition Laboratory in Chicago was authorized in September 1944. This installation had previously operated as The Nutrition Laboratory, Division of Food and Nutrition, Army Medical Center, in Washington. Construction was completed and nutrition research begun in April 1945. This laboratory was located in the same building with the Quartermaster Subsistence Research and Development Laboratory, Quartermaster Central Market Center, and the Quartermaster Food Testing Laboratory, thus bringing together all of the major food research and development organizations of the Army.

There were 520 Army-owned and -operated industrial installations functioning under the occupational health program during the year. In addition, some 70 Army-owned, contractor-operated plants were inspected for sanitation, hygiene, and medical service, although the contractor provided both personnel and equipment. One of the major accomplishments of the occupational health program in 1945 was the establishment of uniform operating procedures for industrial dispensaries. Medical service helped greatly to reduce absenteeism.

Rules governing the employment of pregnant women were set forth during the year, and general public health, nutrition, and immunization programs were maintained. During the period from May 1944, to April 1945, tuberculosis surveys all of civilian employees at 44 large plants, performed with the cooperation of the U. S. Public Health Service, revealed the following results:

Total number of persons X-rayed	164, 749
Active cases revealed	2, 043
Suspicious cases revealed	655
Cases of other pathology revealed	1, 579

Seven Army hospitals, set up to provide treatment for civilian employees and their dependents in "remote areas" working in Army industrial plants, continued in operation throughout the fiscal year. Fee scales were reviewed and more uniform charges established. The seven hospitals served a total civilian population of approximately 20,000.

The Armored Medical Research Laboratory continued its work on mechanized warfare hazards and medico-physiological experimentation in an effort to improve the fighting ability of the American soldier under varying environmental conditions met in combat.

The Army Industrial Hygiene Laboratory centered its studies on measures for the prevention of occupational diseases and the maintenance of healthful working conditions including effective ventilation, temperature and humidity, plant housekeeping, and personal hygiene. A continuing check was made on the effectiveness of control measures in operations involving TNT exposures. Among 30,000 TNT-exposed employees in Government-owned, contractor-operated loading and manufacturing plants, for the months of November and December 1944, and January 1945, there were only 7 lost-time illnesses, 423 new job replacements, and one death resulting from toxic TNT absorption.

Immunization procedures continued to be of major importance. The production of the new influenza vaccine was delayed considerably beyond the anticipated time for deliveries because of unforeseen difficulties encountered by the manufacturers. A large stockpile of the vaccine was available, however, by the end of the year. A small amount was shipped overseas, but because of the very favorable respiratory disease record of the year, no vaccination was performed except at a few stations experiencing outbreaks of virus B influenza in May 1945.

The policy for typhus immunization was changed. Two doses were given at weekly intervals instead of three, and it was recommended that in areas where revaccination was desirable a stimulating dose be given only at those seasons of the year when danger from the disease was greatest. The expiration date of the vaccine was extended from 12 to 18 months.

A study of persistence of immunity to tetanus was also undertaken. Blood samples were taken before and after administration of stimulating doses of toxoid to persons who had received their initial immunization and single stimulating dose 2 or more years previously, and had received no toxoid since. This confirmed the belief that a good response was obtained from an antigenic stimulus a number of years after the basic immunization. Hence there was no need for additional doses following the initial series and the single stimulating dose 1 year later, except for the booster dose at time of injury.

The War Department's program for aid to civilian populations in liberated countries necessitated the training of medical officers for this specialized function. Although no major epidemics occurred, the medical problems in liberated countries after years of German occupation were tremendous. The public health and epidemiological aspects of the movement of large numbers of displaced persons required considerable attention. Nutrition teams were sent to Europe to make nutritional surveys. Three of these teams were in Holland,

and Germany at the end of the year, and two more were planned. In Italy, medical officers assisted in, and supervised programs, for the control of smallpox, typhoid, malaria, and typhus. They also rendered general assistance to the Italian government in the rehabilitation of the Italian Department of Public Health. The quantity and quality of the medical supplies furnished liberated areas were those considered essential for relief and the prevention of disease.

Surgery

Although no strikingly new principles of wound management were introduced, the past year witnessed considerable progress in surgical care. This resulted from far greater surgical experience, from better understanding of the factors involved in the pathology, physiology, and healing of wounds, and the widespread application of a plan of wound management specifically geared to the military environment. The latter was perhaps the most important advance yet made in war surgery. It involved the so-called "phasing" of surgical management in conformity with military echelons. These phases were: (1) initial wound surgery, which was a function of advance hospitals and consisted of surgical procedures designed to save life and prevent or eradicate infection; (2) reparative wound surgery, which was a function of general hospitals of the Communications Zone and was concerned with the more definitive steps in surgical management in order to shorten the period of wound healing, restore early function, and minimize ultimate disability; and (3) reconstructive and rehabilitation measures, which were functions of general hospitals in the zone of interior and were concerned with the correction of deformities and the rehabilitation of certain disabilities. This plan of wound management was applied in all the specialized fields of surgery and resulted in great improvement in the care of all types of injuries including the more serious and disabling wounds of the abdomen, the thorax, and the nervous system.

Certain specialized surgical centers were expanded during the year, and other general hospitals designated as centers in various specialties. The important contributions which these centers in the zone of interior made in the care of casualties could not be overemphasized. These hospitals, with their specially selected staffs, made possible research on such problems as peripheral nerve injuries, vascular injuries, spinal cord injuries, traumatic osteomyelitis, and other cases of great importance to military surgery.

Orthopedic surgery assumed increasing importance, as evidenced by the fact that the total amputation cases in Army hospitals on 1 July 1944, was only 1,827 whereas on 1 May 1945, it had reached 7,926. About 5 percent of the major amputation cases had two amputations. By 30 June 1945, there were six cases of triple amputations, and two of quadruple amputation, one of which resulted from freezing after an airplane crash in the United States and the other from the explosion of a mine on Okinawa. Of some 11,000 amputation cases, 46 percent required removal of a leg below the knee, 27 percent a leg above the knee, 11 percent an arm below the elbow, and 10 percent an arm above the elbow.

Facilities for the training of the blind were provided at Old Farms Convalescent Hospital, Avon, Connecticut. This installation was

expanded to care for 200 cases and additional space for teaching activities was provided. The Army has been particularly concerned with the welfare of blinded soldiers following discharge from service. The Medical Department worked with the Veterans Administration on this problem. The latter assigned two of its staff to Old Farms Convalescent Hospital so that they might become personally acquainted with each of the blinded soldiers and know his background, education, and training. A committee composed of twelve civilians prominent in the education and training of the blind was appointed by The Surgeon General to advise the Medical Department on the Army's program. The work of this committee was very helpful in improving care of the blinded.

Three centers for the care of the deaf were in operation at the end of the year. Many problems were encountered in this phase of the Medical Department's work, including difficulties in obtaining highly specialized instructors and in installing and maintaining necessary electro-acoustical equipment. A unique feature of the Army's program for the deaf was found in the collaboration of the physician, the engineer, the psychologist, and the teacher—each contributing his specialized knowledge to rehabilitation of the deaf soldier. Hearing aids were furnished to personnel in active military service who were suffering from hearing defects that precluded the performance of military duty, regardless of line of duty status, when examination showed that such aids would materially improve the hearing of the individual.

Of great importance as a contributing factor in the achievement of a low mortality rate among the wounded was the improvement in agents and equipment used to induce anaesthesia. Available figures indicated that there was a lower mortality rate from anaesthetic deaths in the Army than in civil practice. Ether, sodium pentothal, and procaine hydrochloride and the equipment required for their administration proved to be especially well adapted for use in forward installations.

Until recently, there was a paucity of information on the bodily distribution of wounds and the cause of death in action. In fact, when the war began, the only reliable available data were based on studies made during the Civil War. During the past year, however, several reports on this subject were compiled. Aside from its purely military value, this information was of primary interest to the Medical Department in determining the lethality of weapons, the regional distribution of wounds, the relation between the weapons used and the location of hits, the severity of wounds by location and causative agents, and criteria for evaluating body armor. Certain data showed that a newly developed type of body armor might reduce the killed in action by an estimated 12 percent and the wounded by about 8 percent.

Neuropsychiatry

Mental and nervous disorders continued to exact a heavy toll of Army manpower. The manifold problems presented by these conditions, however, were met more effectively than during the earlier stages of the war as psychiatric principles were increasingly utilized at induction stations, training centers, and in combat theaters. Moreover, the provision of convalescent hospital facilities especially adapted

to the treatment of neuropsychiatric casualties and the use of modern therapeutic techniques resulted in salvaging an increasing number of men for duty. In February 1945, disability discharge rates for psychiatric conditions reached the lowest point attained since July 1942.

The establishment of twelve convalescent hospitals in the United States recognized the fact that a majority of psychoneurotic cases did not require the type of care given in general hospitals. In fact, the usual hospital surroundings actually caused many patients to develop further symptoms of invalidism. A more effective hospitalization program was provided by the convalescent facilities, which by 30 June 1945 were caring for approximately 15,000 psychiatric patients. Here patients were removed from conventional hospital surroundings and treated as soldiers. They were organized into companies and battalions, housed in improved barracks, clothed in uniforms, and given a full-time schedule of technical and prevocational training, occupational therapy, recreation, athletics, and entertainment. Their psychiatric treatment and the over-all rehabilitation program were supervised by psychiatrists, one of whom was assigned to each company.

Since the shortage of psychiatrists did not permit individual treatment in convalescent facilities, group psychotherapy was increasingly utilized and its value clearly demonstrated. Many patients were returned to duty following treatment in convalescent hospitals. Cases which were not salvageable for further duty were retained until they received the maximum benefit of treatment. They then returned to civil life better adjusted to take their places in society and to pursue a gainful occupation. This system of treatment and rehabilitation represented a radical departure in handling psychoneurotic patients, since previous emphasis had been given to prompt diagnosis and prompt disposition of all cases with little emphasis on treatment.

The early treatment of psychiatric disorders incurred during combat also salvaged many men for service. Treatment was given as close to the frontline as possible—often within the sound of gunfire. Psychotherapy with sedation was used extensively for certain types of combat cases and in some instances hypnosis without sedation was employed. Both methods of treatment yielded good results. Earlier in the war, less than 10 percent of the men who broke down in combat were returned to duty. By 30 June 1945, 40 to 60 percent were reclaimed for full combat duty, and 80 to 90 percent of the remainder for limited duty. Indiscriminate evacuation of oversea neuropsychiatric casualties to this country ceased.

Progress was also made in the treatment of the more severe types of mental cases—the psychotics. Twenty-seven general hospitals were designated to render specialized care for them. In these installations, subinsulin and electroshock therapy were administered. Previously a large percentage of these cases were discharged or transferred directly to veterans' facilities for further hospitalization. Through the use of shock and other types of therapy, a majority of psychotic patients were sent home either in an improved condition or completely recovered.

Patients having conditions involving the central nervous system were hospitalized in 19 neurological centers. Aphasic language disorders, resulting from severe head injury sustained in combat, required particular attention in these centers. Psychologists possessing special knowledge of speech pathology and speech correctionists were available

to aid the neurologist in carrying out the details of speech training. Clinical psychologists and psychiatric social workers were recruited to assist in certain phases of the neuropsychiatric program. Training programs were instituted for such personnel qualifying for assignment in Army hospitals. Their services proved of great value.

During the past year, psychiatrists devoted considerable study to several problems that were intimately related to the incidence of psychoneurosis in the Army. One of the most important of these was the misuse of medical channels to effect discharge or reclassification of individuals who were noneffective for reasons other than sickness. In the cases referred to, there was no physical disability from medical causes. The real causes included inadequate training, defective attitudes, misassignment, inaptness, lack of physical stamina, and others. During this war, as in previous ones, there has been a tendency to disregard these causes and to attribute all noneffectiveness to medical disability. Hence, an unjustified medical diagnosis was often resorted to in order to effect desired dispositions. This practice resulted in unnecessary loss of manpower. Furthermore, it had an adverse effect on morale, and actually caused or at least encouraged the development of psychoneurosis among men seeking an honorable and easy way of escape from service. Psychiatrists persistently stressed the fact that undue leniency in granting medical discharges should cease. It was strongly recommended that administrative disposition be employed in those cases which did not fully justify medical action.

Psychiatrists were also concerned with the hardships undergone by infantrymen in combat. Troops in this branch of the service suffered the highest attrition rates and the highest neuropsychiatric rates. Unless rotated or given rest periods, the infantryman tended to develop various types of illness, particularly neuropsychiatric, and to become noneffective. It was felt that rotation or rest periods after a stated combat tour would be the most effective means of providing infantrymen with the incentive necessary to maintain mental health and maximum effectiveness. Recommendations were consequently made that a policy of rotating infantrymen after a stated combat tour be adopted, whenever feasible.

The need for psychiatrists continued to be critical. The School of Military Psychiatry, located at Mason General Hospital, conducted four 3-month courses for recently graduated internes. A total of 279 officers completed the course in 1945. New instructors, fresh from oversea assignments, were added to the faculty. Their long and varied experiences in active theaters enabled them to impart to their students the latest information regarding psychiatry as practiced on the fighting fronts. Two 3-month courses in basic psychiatry and neurology were given at Columbia Presbyterian Medical Center and at New York University. Seventy-four student officers completed the two courses at Columbia and 57 completed the two courses at New York University. These schools contributed much to psychiatric education.

Whole Blood for the Wounded

Penicillin, blood plasma, and the sulfa drugs have been acclaimed as the principal life-saving agents of this war. To the list must now

be added another—whole blood. The program which was organized during 1945 to supply the fighting fronts with whole blood was a notable accomplishment. Once the urgent need for whole blood was known, the organization, the equipment, and the transportation system necessary to send whole blood oversea were put to use almost overnight.

The need for whole blood was first demonstrated during the military campaign in North Africa. Observations made at that time showed that plasma, although effective in bringing seriously wounded men out of shock, did not resuscitate them sufficiently to withstand any life-saving surgery that was subsequently necessary. It was realized that these patients required more than restoration of circulating blood volume as supplied by plasma. Whole blood was the only therapeutic agent that could fill this urgent need.

Prior to the shipment of whole blood from the zone of interior, our forces in Europe and North Africa established blood banks in individual hospitals. In February 1944, at the beginning of the Anzio offensive, a blood bank unit was organized in MTO to supply blood to all Fifth Army hospitals. This was the first unit of its kind ever established in the U. S. Army. Approximately 400 pints daily were furnished these installations. The clinical value of whole blood was conclusively demonstrated again as a result of this experience. Emphasis consequently shifted from plasma to whole blood as the agent of choice in combating shock and in preparing seriously wounded patients for surgery. Nevertheless, plasma continued to be used in large amounts, especially in forward areas.

In August 1944, it was foreseen that the ETO blood bank, which was established prior to D-day, could not furnish enough blood to meet the needs of Army hospitals in France. The theater surgeon therefore requested that whole blood, Type "O", be shipped from the zone of interior. Fortunately, this need had been anticipated and most of the essential items of equipment had already been developed, including anticoagulant solutions and donor and recipient sets, which were used to withdraw and administer blood. Utilizing the facilities of the Air Transport Command, whole blood shipments were started on 21 August 1944 within a few days after the official request was received by The Surgeon General. At first, about 258 pints were shipped daily, but later in the summer the amounts increased until more than a thousand pints, weighing approximately 5,000 pounds, were shipped daily except Sunday. Shipments continued until 10 May 1945, when the Office of The Surgeon General was notified that ETO no longer required whole blood from the United States. Thereupon blood previously destined for Europe was immediately diverted to the Pacific.

Whole blood for ETO was drawn from civilian donors at the American Red Cross Blood Donor Centers in Boston, Brooklyn, New York, Baltimore, and Washington. Medical officers and enlisted technicians were assigned to each of these centers. (The Baltimore and Washington centers were Navy-operated.) Travel time from New York to Paris approximated 26 hours under ideal weather conditions. Not infrequently, however, it required up to 5 days for final delivery.

From the outset of the whole blood program, it was realized that refrigeration of the blood en route was desirable. Early shipments to

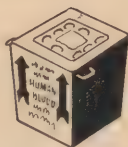
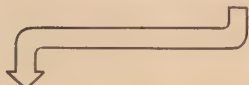
WHOLE BLOOD FOR THE WOUNDED

IN 36 TO 48 HOURS

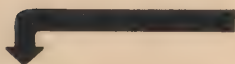


ELEVEN RED CROSS
BLOOD DONOR CENTERS
FURNISH TYPE "O" WHOLE BLOOD
(UNIVERSAL DONOR TYPE)

1. BLOOD IS PROOF-TYPED TO ESTABLISH THE FACT THAT IT BELONGS TO GROUP "O"
2. SEROLOGY TESTS PERFORMED
3. TITRE TESTS PERFORMED
4. CONTAINERS DATED (BLOOD MAY BE SAFELY TRANSFUSED 21 DAYS AFTER DONATION)



IN ONE HOUR BLOOD IS SENT
TO AIRPORT IN REFRIGERATOR

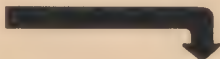


NEW YORK

BLOOD FOR ETO SHIPPED FROM
LA GUARDIA FIELD TO PARIS IN 24 HRS.



MOVED PROMPTLY TO FORWARD
ECHELONS BY PLANES AND
REFRIGERATOR TRUCK



OAKLAND

BLOOD FOR POA SHIPPED FROM
OAKLAND AIR BASE TO GUAM
IN 36 HRS.



BLOOD SENT BY PLANE AND
DROPPED BY PARACHUTE TO
COMBAT TROOPS



ETO, however, were not refrigerated, since it was assumed that the relatively high altitudes maintained by planes would keep the blood sufficiently cool. The bottles containing the blood were chilled before and after the blood was drawn, and when ready for shipment, they were packed in cardboard boxes wrapped in heavy paper. The dating period on blood shipped under these conditions was 16 days.

After 9 April 1945, whole blood was shipped in a special insulated refrigerator containing a can of wet ice. Thereafter, the dating period of blood was extended from 16 to 21 days.

From 21 August 1944, to 10 May 1945, a total of 206,000 units of group O blood were shipped to ETO.

The plan for shipping blood to the Pacific Theaters, including both POA and SWPA, was very much like the program organized for ETO. It was Navy-operated from the West Coast, in cooperation with the Army. From November 1944, to May 1945, 105,000 pints of blood were shipped to the Pacific. Daily shipments averaged from 300 to 1800 pints, depending upon battle conditions.

Dental Service

During 1945, particular attention was given to providing the type of dental treatment required at the various types of military stations. Thus, the dental facilities at reception centers were utilized to the fullest extent possible in performing such essential dental work on newly inducted or enlisted personnel as could be done without causing delay in their transfer to other stations. At replacement centers, in order that all time available for training might be utilized, a maximum number of dental appointments were made outside of training hours during evenings and Sundays. At redistribution stations, dental treatment required for returnees was initiated promptly so that there might be no delay in the military schedule. Military personnel about to be separated from the service at separation centers were given priority for dental treatment, so that it could be completed within the 48 hours required for the release of personnel.

The backlog of necessary dental service which was caused in 1943, and early in 1944, by the rapid induction of a large number of men with many dental defects was largely ended by 30 June 1944. A more complete dental service became available thereafter. The total amount of work during the year included more than 25,000,000 permanent fillings, more than 4,200,000 extractions, over 1,000,000 dentures constructed, over 320,000 dentures repaired, almost 37,000 crowns constructed, and over 3,000,000 prophylactic treatments.

The artificial plastic eye program was another interesting development of the year. Early in the war it was known that artificial glass eyes would not be available in sufficient quantities to satisfy the needs of the Medical Department. The Army inducted about 7,000 men wearing glass eyes, and this number, together with new injuries and wounds, made the replacement problem acute. There were only 14 craftsmen in the country capable of producing satisfactory custom-made artificial eyes, and they persistently neglected all opportunities to impart their skill to others; all supplies used in the craft were imported from Germany. The Medical Department spread these meager resources as far as possible. The eye-makers were employed to visit Army hospitals in the United States and furnish custom-made

eyes to patients requiring them. All suitable stocks of artificial eyes were purchased, and those of the best quality were sent overseas. But as casualties mounted in Europe and the Pacific, it became clear that the available resources would not be sufficient.

At this point, the Medical Department launched a program which involved the fabrication of custom-made artificial eyes from a plastic material. Three dental officers, who had worked separately upon the problem, were brought together at Valley Forge General Hospital. After 6 months of research and experimentation, they perfected a technique for the manufacture of this prosthesis, and in succeeding months they trained a large number of other dental officers in this work. By 30 June 1945, these officers, aided by enlisted technicians, were operating approximately 30 plastic artificial eye laboratories in general hospitals in the United States. A total of 2,500 plastic eyes were produced.

In practically all respects, the plastic eye was at least equal to the glass eye; in many characteristics, it was superior.

Veterinary Service

During the calendar year 1944, the Veterinary Corps inspected the largest volume of meat, meat food, and dairy products in the history of the Army—8,222,504,543 pounds. The inspection of such an enormous amount of foodstuffs, much of it highly perishable, was accomplished with no serious widespread outbreak of disease among troops traceable to the issue of unwholesome meat, meatfood, and dairy products. In addition to protecting the health of troops, the Veterinary Corps' meat and dairy inspection service also protected the financial interests of the Government. This was borne out by the fact that products rejected for failure to meet Army specifications in 1944 represent an estimated equivalent monetary saving of \$27,460,000.

Over 50 million pounds of powdered eggs were procured for the Armed Forces during 1944. Inasmuch as the powdered egg industry was a comparatively new one in the United States, many changes in operational procedures and equipment had to be made. Especially trained veterinary officers visited the drying plants and outlined the necessary changes and improvements to insure the sanitary quality of the product.

Milk shortages were relieved at a number of camps located in the southern part of the United States by shipping pasteurized milk from northern milk sheds. The milk was shipped in paper quart containers under dry ice refrigeration. This practice proved satisfactory with few exceptions. All the important sources of fresh milk in all service commands were surveyed. These indicated that the fresh milk supplied to Army installations in the United States was of satisfactory quality.

The daily average number of horses and mules of the entire Army in the calendar year 1944, was 43,334. This represented a decrease in the total animal complement. Horses and mules were extensively used in Italy during the year, and much veterinary work was necessary. Veterinary officers serving in the India-Burma and China Theaters rendered invaluable service to the Chinese Army.

In China, where animals were the principal mode of transport, it was vitally important that their health and physical efficiency be safe-

guarded. After nearly 6 years of war, however, the Chinese had practically no supplies and equipment for the care and treatment of animals. Furthermore, wartime conditions had made severe inroads on veterinary education in China. Consequently, Chinese veterinary personnel had to be schooled in modern, scientific methods of care and treatment. To accomplish this, U. S. Army veterinary officers established schools for Chinese veterinarians.

In all oversea movements of animals, Veterinary Corps officers accompanied each shipment to its final destination. Despite the fact that most animal transports were en route as long as 45 to 60 or more days, all shipments were completed with the animals in excellent condition and with exceptionally few losses.

The health of Army horses and mules continued to be highly satisfactory. All Army horses and mules were afforded complete protection against infectious equine encephalomyelitis for the sixth consecutive year. The incidence of influenza, strangles, and common respiratory diseases continued at a low level.

On 1 January 1945, the dog strength of the Army was 4,118. In safeguarding the health of dogs, those known to be under 2 years of age were immunized against distemper. All dogs, at the time of acceptance by the Army, were vaccinated against rabies. Some 10,000 cases of rabies were reported among civilian-owned animals during 1944, in contrast to the complete absence of the disease among Army animals.

Health Statistics

Despite the fact that in 1945, about 60 percent of the total Army was overseas exposed to health hazards resulting from combat conditions and from environmental and climatic conditions in tropical and subtropical areas, the admission rate per 1,000 men per year for nonbattle causes was the lowest since the outbreak of the war, 694 compared with rates of 861 and 767 in the two immediately preceding years. The death rate from disease remained unchanged at the very low figure of 0.6 per 1,000 per year; the death rate from nonbattle injury increased slightly from 2.9 to 3.1 per 1,000 so that the total death rate from nonbattle causes was slightly higher than during the previous year.

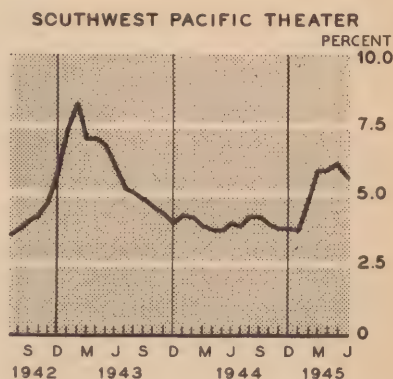
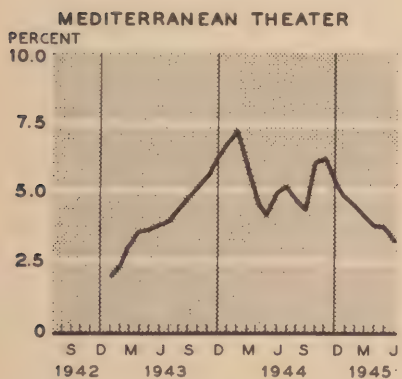
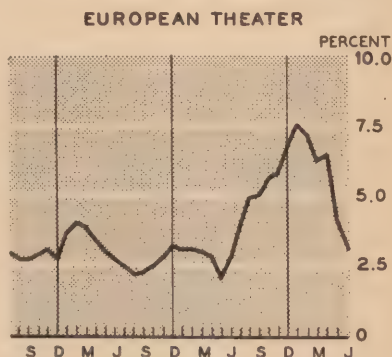
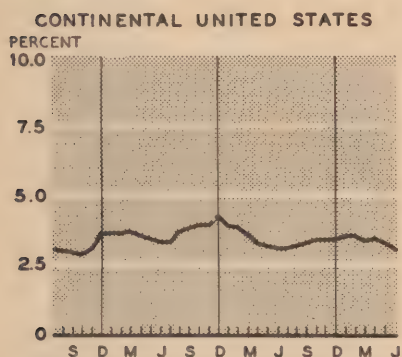
The admission rate from disease and injury for the Army in the United States decreased nearly 25 percent during the past year, with the result that the rate of 631 per 1,000 per year was the lowest since 1939. More than one-half of the decrease in the admission rate resulted from the unusually low prevalence of common respiratory diseases which were at the lowest level in the past 10 years. Illness from pneumonia, which frequently was a complication of colds and influenza, also decreased nearly 25 percent, reaching the comparatively low level of 11.7 per 1,000 per year.

The incidence of the other common communicable diseases, measles mumps, scarlet fever, and meningococcic meningitis was appreciably lower than during the previous year. Diarrhea and dysentery, which increased more than 50 percent in 1943-1944 as compared with 1942-1943, decreased about 25 percent during the year, but was still somewhat more frequent as a cause of illness than in the 2 previous years.

The increasing number of personnel in the United States who had served overseas was reflected in the rise in the admission rate for malaria from 1.4 to 8.0 per 1,000. The incidence of malaria acquired in the United States, however, remained at the low figure of 0.2 per 1,000 which was the same as that reported in the previous year.

One important accomplishment in this war was the careful screening of men with tuberculosis at induction stations. This was reflected in the extremely low admission rate for tuberculosis in the Army, 1.1 per 1,000 which was lower even than the rate during the previous 12 months, 1.2 per 1,000.

NONEFFECTIVES AS PERCENT OF STRENGTH



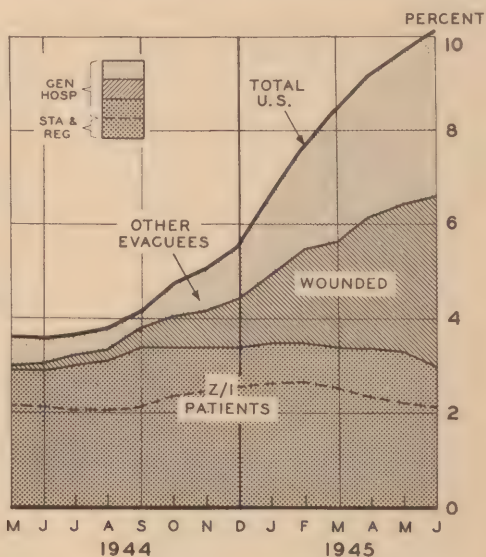
In contrast to the lower incidence of most diseases during the past fiscal year, the admission rate from venereal disease increased steadily from 24 per 1,000 in February 1943, to a peak of 47 per 1,000 in January 1945, an increase of nearly 100 percent. After that date, the rate declined slightly, but still was above 40 per 1,000. Fortunately, because of the advance in methods of treatment, this sharp rise in the number of new infections did not result in an increase in total noneffectiveness from venereal disease. In fact, the noneffective rate was slightly lower at the end of the fiscal year than it was at the

beginning. The average length of treatment in hospital for a patient with venereal disease in 1939 was 42 days; by January 1945, this had been cut to about 6 days.

The health of the WAC as measured by the admission rate to hospital and quarters continued to be satisfactory during the year. In keeping with the experience in civilian populations, the sick rate for the WAC was from 20 to 50 percent higher than the corresponding rate for males. A larger proportion of the conditions causing excuse from duty among the WAC were relatively minor, so that noneffective rate for the WAC was about the same as that for males in the Army.

By February 1945, evacuated patients hospitalized in the United States exceeded the number of patients under treatment after admission from troops stationed in this country. This evacuee load increased rapidly in the spring of 1945 and by June accounted for 70

NONEFFECTIVES IN CONTINENTAL U. S. AS PERCENT OF Z/I STRENGTH



percent of all patients in this country. This fact caused the noneffective rate in the United States to rise to more than 10 percent at the close of the fiscal year. When the days lost by patients from overseas were deducted, the noneffective rate for personnel stationed in this country became about 30 per 1,000 per day or 3 percent, which is about the same as that reported in 1942.

The most important factor affecting the health of the Army overseas was the opening of the land offensive in France in June 1944. Between 6 June 1944, and VE-day, Army hospitals in the European and Mediterranean theaters admitted more than 450,000 wounded personnel. Even so, this number was only about 35 percent of the total number of patients admitted for all causes combined.

The excellent state of health of the troops overseas was shown by the fact that the total admission rate from all causes, 869 per 1,000, was 15 percent less than the corresponding rate during the previous year, in spite of the greatly increased admission rate for wounds

received in combat. Although nonbattle injuries were 113 per 1,000 compared with 133 per 1,000 in the previous year, the major part of the decrease in the admission rate resulted from the lower incidence of disease. Sickness overseas from colds and influenza dropped from 181 to 132 per 1,000, the rate for diarrhea and dysentery from 66 to 38 per 1,000, and the rate for malaria from 96 to 38.

The drop in the admission rate from malaria overseas was especially striking in the Pacific, where it had been one of the major causes of noneffectiveness. During 1943, in the Southwest Pacific, the admission rate from malaria rose to 245 per 1,000 per annum, and the rate in the Pacific Ocean Area was nearly as high, 208 per 1,000. Peak rates were even higher. The effectiveness of antimalarial measures was demonstrated by the drop in these rates to 53 and 43, respectively.

In the face of intense combat activity the health of the troops in the European theater remained remarkably good. The admission rate for nonbattle causes decreased more than 60 percent. One of the most serious health problems in this theater was the large number of combat troops disabled by trench foot. Despite the forewarning of the experience in Italy during the winter of 1943-1944, trench foot began to appear among troops in France during the latter part of October 1944. By 1 March 1945, about 42,000 men had been admitted to hospitals for this cause alone. Apart from trench foot, the health conditions among troops in the European theater excelled that of troops in any other theater.

Except for troops in the China-Burma-India theater, illness decreased for both disease and nonbattle injury. Admission rates were lowest in the European, North American, Alaskan, Latin American, and the Pacific Ocean areas, ranging from slightly over 500 per 1,000 per annum to slightly less than 700 per 1,000 per annum. In the remaining theaters, Mediterranean, Middle East, Southwest Pacific, and China-Burma-India, admission rates for nonbattle causes ranged from 984 to 1,173 per 1,000 per annum.

Because of the number of men killed in action, the death rate among oversea troops rose sharply after June 1944. If deaths resulting from combat were excluded, the death rate 3.6 per 1,000 per annum was less than that in the preceding year, 4.0 per 1,000 per annum, resulting from a lowered mortality from nonbattle injuries.

Personnel

The scarcity of officers in both the Medical Corps and the Army Nurse Corps was one of the most acute problems of medical service during 1945. After victory in Europe, the critical period passed. Because of the larger number of patients in hospitals in the United States and overseas, and with new operations in the Pacific soon to start, relatively few Medical Corps officers could be discharged during the fiscal year 1946.

Since there was a scarcity of qualified doctors in the United States to meet the large military requirements and furnish adequate service to the civilian population at the same time, the War Manpower Commission and the Secretary of War fixed a ceiling of 45,000 Medical Corps officers for the Army. Some fluctuations between 45,400 and 45,600 was authorized to permit The Surgeon General greater flexibility.

During the year, 3,000 interns who completed their professional training were ordered to active duty. Their commissioning permitted the relief from active duty or the transfer to other government agencies of a certain number of officers. Some were assigned to the Veterans Administration. Similar transfers to the Naval Medical Department were considered. Experience demonstrated, however, that such transfers without the officers' consent were not desirable. Consequently, at the end of the year only those doctors were transferred to the Veterans Administration who formerly worked for that agency or expressed a desire to serve with it. Navy requirements were to be met by assigning interns upon completion of their training.

The scarcity of Medical Corps officers and nurses necessitated the shipment to Europe of some general hospitals with incomplete or unbalanced staffs. Twenty-three such hospitals were shipped with only 16 of the authorized 32 Medical Corps officers, and 26 additional ones without their quota of specialists. Sixteen 1,000-bed general hospitals with a normal quota of 83 nurses were shipped without nurses. These shipments were made since it was known that the hospitals could be properly staffed in the theaters with Medical Corps officers and nurses made available by reassignment from hospital staffs on duty there.

Medical units going overseas in the early days of the war had a higher proportion of skilled surgeons than could be provided later. Adjustments in medical personnel between hospitals overseas accordingly became necessary. In March 1945, when it became apparent that there would be a shortage of Medical Corps officers in the United States because of the large number of patients transferred from overseas, The Surgeon General recommended that 1,000 officers be returned to the United States from theaters where their services were no longer required. This was being arranged at the end of the year.

There was also a shortage of Medical Corps specialists, and in some instances a faulty distribution of them. The continuing studies of the requirements and availability of specialists that were started in the fiscal year 1944 helped to relieve faulty distribution which caused shortages in some areas and overages in others. Intensive courses of professional specialist training provided additional specialists with at least the minimum required training.

The most acute shortage of all was in Army nurses. In July 1944, the ceiling on nurses was increased from 40,000 to 50,000. Because of delays occasioned in part by the necessary clearance of State Control Boards and the War Manpower Commission, as well as the decline in applications from qualified nurses, little increase occurred. By the end of the year, only 2,000 additional nurses had been obtained. The raising of the ceiling from 50,000 to 60,000 further increased the number required. Consequently, the President recommended to Congress that the Selective Training and Service Act be made applicable to female nurses. The bill passed the House of Representatives but was still pending in the Senate when Germany surrendered. The Secretary of War then recommended that no further action be taken on the measure.

The general publicity incident to the discussion of the draft bill, with a growing appreciation that additional nurses were urgently required, stimulated recruitment greatly. The weekly average of

applications received increased from 343 during the last 6 months of 1944, to 723, during the first 5 months of 1945. From January to May 1945, 13,270 nurses were commissioned in the Army Nurse Corps. Another factor that accelerated procurement was the approval by the War Manpower Commission of the request of the Secretary of War that The Surgeon General be authorized to accept qualified nurses without clearance by the Commission or by State Control Boards. After the middle of May the ceiling was reduced to 53,000. The number on duty on 30 June 1945, was slightly below this figure.

During the year, the members of the Army Nurse Corps showed exceptional devotion to duty under the most trying circumstances. They cared for sick and wounded soldiers in every type of hospital with the exception of the most advanced ones. Seven were killed in action and six on the United States Hospital Ship "Comfort." Twenty-five were awarded the Purple Heart. Sixty-six were held as prisoners of war of the Japanese in the Philippine Islands until they were liberated in February 1945. Following liberation, each nurse was commissioned in the Army of the United States and promoted one grade. Two, who were wounded during the attack on Manila, received the Purple Heart. Each one was awarded the Bronze Star Medal and the President's Citation.

German medical officers and hospital corpsmen who were held as prisoners of war in this country and other German prisoners of war were employed to provide medical service for their nationals in the United States. In addition, general and station hospitals in every service command utilized prisoners of war. They helped to meet shortages in civilian workers, and performed many useful services.

It was War Department policy that commissioned officers of the Dental Corps should be limited to 15,200, although no ceiling was set by the War Manpower Commission. This strength was not exceeded. It was necessary, however, to discontinue ASTP training for dental students effective with the senior class. No further commissioning of dentists was necessary. To reduce the overage caused by the commissioning of graduating dental students, over-age officers and others physically unable to perform a full day's duty were relieved from active service.

During the early part of the fiscal year, there was a deficit of enlisted medical personnel of the Medical Department and particularly of male technicians. This shortage became so acute that instructions were issued in section IV, ASF Circular 10, 1945, that men who had been trained as Medical Department technicians and who were assigned to other services should be reassigned to the Medical Department. Later, on 16 April 1945, a War Department order was published to the Army Ground Forces, the Army Air Forces, and the Army Service Forces directing that all personnel be surveyed and that medically trained men be reported to The Surgeon General for recommendation for such reassignment as he considered advisable.

A medical badge was authorized 1 March 1945, for award to Medical Department personnel below the grade of field officer on duty with the Infantry. It carried the same prestige as the combat infantry badge. This gave recognition to the service performed by medical personnel under combat conditions with the Infantry and was highly important for morale.

In January 1945, in order to help meet personnel shortages the Chief of Staff of the Army directed that one or more hospital companies be organized at each general hospital in the United States, each company to consist of 100 enlisted women. A total of 167 units were planned, of which ninety-two had been organized at the end of the year. The program to recruit WAC female technicians for Medical Department installations that extended from June 1944 through 30 April 1945 procured 7,666. In addition, 7,100 were enrolled for duty in general hospitals.

Every effort was continued to employ civilians for service in Army hospitals to relieve and conserve military personnel. In one general hospital more than 700 were so employed. The proportion of women among civilians was high. They performed a variety of tasks including those of technicians. Many of them were specially trained for this work by the ASF

Chapter 6. PERSONNEL SERVICES

INDUCTION AND ASSIGNMENT

Inductions into the Army during the fiscal year were slightly less than in 1944, totaling some 873,000 compared with 943,000 in 1944. The number of induction stations maintained by the ASF was reduced from 79 to 63 and the number of reception centers for the classification and assignment of personnel from 26 to 21. The number of rejections for physical causes among men reporting to induction stations increased in proportion to the total referred by selective Service Boards. These rejection rates were carefully studied to determine their meaning for Army induction operations.

Particular emphasis was given throughout the year upon the induction of men suitable for combat training. By the fiscal year 1945, the single largest continuing demand for military personnel came from the Army Ground Forces with its need for individuals to be trained as infantry and armored force replacements. In accordance with a directive from the President on 4 January 1945, the Army began to induct men under 38 years of age who left essential industry without the approval of their local Selective Service Board. Only a very few men were inducted under this provision. In May 1945, the War

ARMY INDUCTIONS

FISCAL YEARS 1944 - '45

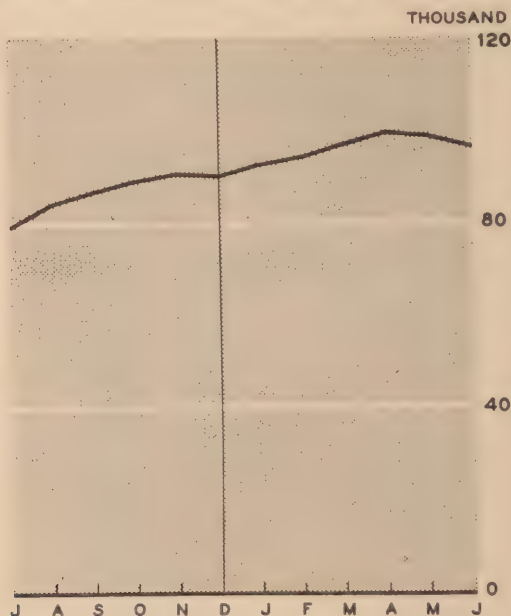


Department made a call upon the Selective Service System for a limited number of men under 26 years of age whose physical condition was less than that previously required. These men were to be assigned to noncombat duties with the various commands of the Army.

WAC Recruiting

The total enlisted strength of the Women's Army Corps increased from 71,287 on 1 July 1944, to over 99,000 on 30 April 1945. The strength of the Corps declined to 96,000 at the end of the year. A WAC recruiting service combining all recruiting personnel and activity of the Army Air Forces, the Army Ground Forces, and the Army Service Forces was established on 1 July 1944. This service was directed by The Adjutant General's Office. On 1 January 1945, the recruiting program was expected to be drastically reduced since the objective thereafter would be simply to maintain the Corps at its

WAC STRENGTH



existing strength. On 6 January 1945, this plan was abandoned in favor of an intensive recruiting program to obtain personnel for service at Army general hospitals. This recruiting program began on 1 February 1945, with the objective of recruiting 7,000 women to serve as medical and surgical technicians. More than the desired number were recruited and the drive completed by April 1945. In the month of March alone, more than 4,500 women were recruited for service in the Women's Army Corps. On 1 May 1945, the WAC recruiting service was discontinued with the intention of maintaining the Women's Army Corps only at existing strength.

Classification and Assignment

The reception center testing program was completely revised during the fiscal year 1945. The existing Army general classification

test was replaced by a new one composed of four separate parts: reading and vocabulary, arithmetic computation, arithmetic reasoning, and pattern analysis. The previous test had lost some of its effectiveness through publicity and word of mouth acquaintanceship on the part of new inductees. The mechanical aptitude test was dropped from the reception center program entirely. Where necessary, it was given at training centers and in units as a part of their own assignment activity. A new radio code aptitude test was also developed for use in assignment work at reception centers.

Much additional work was done by The Adjutant General's Office during the year in the development of better classification tests to be employed throughout the Army. Trade screening tests were developed to help evaluate the soldier's knowledge and proficiency in his Army job. These tests were to be given to all enlisted personnel during redeployment before they were sent to a technical training course the second time. In order too provide a measure of control over the content and quality of instruction under the Army Specialized Training Program, a single national achievement test was developed to be given to all graduates. An Army individual test was prepared during the year to provide an indication of general learning ability for use at training centers, convalescent centers, and at general phositals.

Other tests developed and released during the year for use in the classification and assignment of enlisted personnel included an officer candidate test, a warrant officer examination, a night vision test, and West Point qualifying examinations. A special project was begun during the year to develop tests to be used in selecting applicants for commission in the postwar military establishment from among those who have held wartime commissions. The test will encompass all phases of fitness and proficiency.

The personnel audit teams established during the fiscal year 1944 experienced major changes in composition during the fiscal year 1945. An Army Air Forces classification and assignment officer was added to the teams to assist in auditing classification and assignment at Army Air Forces installations. Individuals were shifted frequently from one to another of the four area teams in order to insure a fresh point of view unbiased by acquaintanceships and familiarity in revisiting various military installations. During the fiscal year the four teams visited 372 separate posts and camps throughout the United States. These teams vigorously inquired into all classification, testing, selection, and assignment problems of enlisted and commissioned personnel with the purpose of insuring maximum utilization of individual skills and abilities. Many recommendations resulted from this continuing examination of the classification and assignment problem. By the end of the fiscal year more than 352 recommendations had been acted upon while 38 other recommendations were awaiting action.

A major contribution of the personnel audit teams was the advice and instruction on classification and assignment given station and unit personnel. Local commanders thus became aware of improvement procedures and usually initiated corrective action on their own part. In order to simplify administration of the physical profile system, basic changes recommended by the audit teams were approved by the War Department.

Enlistments

Recruiting for the Army Specialized Training Reserve and the Air Corps Enlisted Reserve was made a responsibility of the Aviation Cadet Examining Boards in July 1944. In October enlistments in the Air Corps Enlisted Reserve were discontinued, while enlistments in the Army Specialized Training Reserve Program were suspended on 1 January 1945. A qualifying test for resumption of the ASTRP was given on 12 April 1945, when 25,000 applicants became eligible for enrollment.

Officer Procurement

The appointment of officers from civilian life declined greatly in the fiscal year 1945. The most important single problem in officer procurement came to an end in October 1944, when the decision was made to recruit no additional doctors practicing in civilian communities.

A total of 2,600 officers were appointed in the Army of the United States from civilian life in the year ending 30 June 1945. Another 1,171 officers with special qualifications were appointed from among enlisted men and warrant officers. Of the total of 3,787 officers thus appointed, 1,850 were medical personnel including doctors, physical therapists, dietitians, and members of the sanitary corps; 746 were chaplains; nearly 400 were commissioned to perform intelligence activities; 282 were commissioned for the Air Forces; 220 were psychologists and other personnel experts; and 122 were transportation officers. As in previous years, all appointments were approved by the Secretary of War's Personnel Board.

Because of its extensive files on personnel of special qualifications, the facilities of the Officer Procurement Service were used in locating personnel by other agencies such as the State Department, the United Nations Relief and Rehabilitation Administration, the U. S. Civil Service Commission, the War Production Board, the War Manpower Commission, and other agencies. Officer files of the Officer Procurement Service were also utilized in locating special qualifications among existing personnel of the Army to fill special assignments.

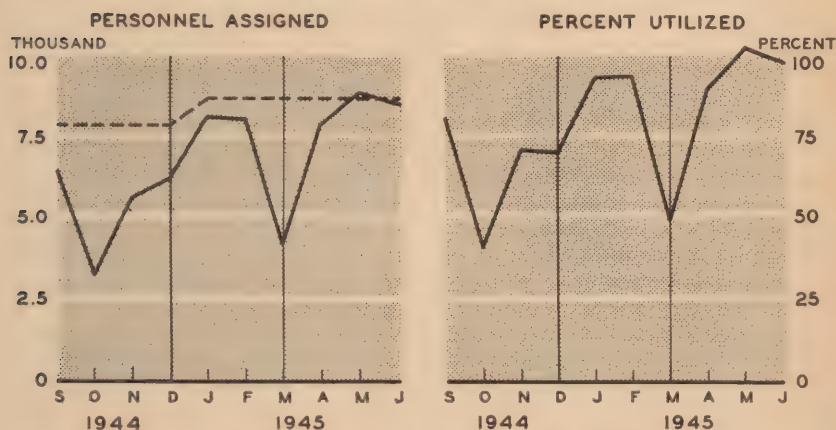
Public Law 350 of the 78th Congress authorized the appointment in the Army of the United States of members of the Army Nurse Corps, dietitians, and physical therapists. In addition, members of the Women's Army Corps were authorized for assignment to the Sanitary Corps. The policy was also adopted of commissioning in the Women's Army Corps women with special training to serve as bacteriologists, biochemists, clinical psychologists, and physical reconditioning officers.

Reassignment of Personnel

At the end of the fiscal year 1944, the Army Service Forces was directed to establish redistribution stations to handle the reassignment of Army Ground and Service Forces personnel returned from overseas under the War Department rotation policy. These stations provided a means for the careful physical and occupational reclassification and reassignment of both enlisted and commissioned personnel carried on without haste in an environment characterized by mental and physical relaxation and comfort.

By early September 1944, five hotel type redistribution stations were opened at Lake Placid; Asheville, North Carolina; Miami Beach; Hot Springs, Arkansas; and Santa Barbara, California. A sixth hotel type station was opened on 15 December 1944, at Atlantic City. Military personnel were permitted to bring their wives with them and to enjoy the luxuries of some of America's finest resort hotels for a stay of 10 days to 2 weeks before reassignment to military duties in the zone of interior. The total capacity of the hotel type stations was 8,630. In order to handle the numbers of military personnel returned under the rotation policy, two post type redistribution stations with a capacity of 4,000 each were also established at Camp Butner, North Carolina, and Fort Sam Houston, Texas. The post type redistribution stations also began operation in September 1944.

UTILIZATION OF CAPACITY - HOTEL TYPE REDISTRIBUTION STATIONS



A major operating problem in managing the redistribution stations was insuring their full utilization. There was no even flow of rotation personnel from overseas, and consequently the hotels might be half empty one week and crowded the next. Thus in the week ending 27 October 1944, hotel type redistribution stations were only 40 percent full; in the week ending 10 November, the hotels were utilized to 102 percent of their capacity. This fluctuation continued throughout the year, depending upon the number of persons being returned from overseas at any one time and the number of dependents accompanying them to the hotels.

Until 12 May 1945, the redistribution stations handled all military personnel returned from overseas for reassignment in the United States, with the exception of those brought back for a specific job. More than 130,000 individuals went through these stations up to the end of the fiscal year. During the same period, some 20,000 dependents had accompanied returnees to the hotel type stations. After 12 May, the rotation policy was suspended in oversea theaters. The redistribution stations continued to handle personnel already en route to the United States and also all American prisoners of war recovered

from the enemy. This personnel was expected to fill the capacity of hotel type redistribution stations until at least December 1945.

Early in the operation of redistribution stations it became apparent that personnel returned from overseas received much erroneous information about the nature of the new assignment awaiting them in the United States. Oftentimes returnees expected to be assigned near their homes, while others feared they would be given positions not commensurate with their previous jobs or inconsequential to the war effort. In order to combat such misinformation, a special effort was made by the ASF to provide the full facts about rotation and reassignment through Army newspapers, the Armed Forces Radio Service, posters, and transport officers on Army transports. Six different Army talks were distributed to oversea theaters dealing with redeployment. It was continually emphasized that until the defeat of Japan there was a big military job for everyone and that no physically fit trained soldier had done his full share until the war was finally ended. Brief orientation talks on reassignment procedures were given to all returned personnel at port staging areas. From staging areas returned oversea personnel were sent to reception stations. These were located at posts where reception centers were operated. Their function was to issue furloughs or leaves and orders to report at redistribution stations for reassignment.

During the process of reclassification and reassignment at redistribution stations, a number of sessions were held to give military personnel full information about the GI Bill of Rights, developments on the home front, and other news.

The Army Service Forces was made responsible in the spring of 1945 for processing all American military personnel captured by the enemy and recovered by American military operations in the Philippines and in Germany. Recovered personnel were handled in much the same manner as returned personnel under the rotation program. Those requiring continued medical attention were moved immediately to general hospitals. By the end of the fiscal year, some 73,000 recovered officers and enlisted men had been returned from Europe.

Redeployment

The movement of all personnel returned to the United States for redeployment in the Pacific was a responsibility of the ASF. As already explained, officers and enlisted men went straight from piers in American ports to staging areas. They were then dispatched in groups to reception stations, formerly used for handling personnel returned under rotation and now prepared to handle redeployed troops. There were 23 reception stations throughout the United States by the end of the fiscal year. Each group of redeployed officers and men came to the reception station nearest their home. Immediately, they were given a 30-day duty assignment to their home. Upon his return to the reception station, each officer and man was moved to the appropriate Ground Forces, Air Forces, or Service Forces training center to begin his redeployment training. At this time military personnel came under the command of the force responsible for his training.

The main problem in handling this movement of personnel was to insure prompt action at all stages. The experience gained by 30 June 1945, indicated that the ASF would be able to handle the increasing

numbers of troops redeployed through the United States without any delay.

Reception stations likewise handled soldiers returned overseas as eligible for discharge under the War Department's adjusted service rating plan. Upon arrival from a staging area, the records of enlisted men were examined to insure that they were eligible for discharge and that they were not critical specialists needed by the Army. If eligible for separation, enlisted men were immediately assigned to a separation center for discharge. Officers who were returned from overseas were given a 30-day duty assignment at their homes while the need for their continued service was reviewed in The Adjutant General's Office in Washington, D. C.

A complicating factor in handling men at reception stations and separation centers was the number of families of soldiers who came to meet them. There were no facilities for housing or feeding families at these posts, and every effort was made to persuade families to wait the day or two until the soldier would arrive in his own home.

Separations

The Army Service Forces began the test operation of separation centers in the last quarter of the fiscal year 1944. Upon the basis of this test, a pattern for the establishment of a complete separation system capable of effecting partial or complete demobilization of the Army was established. Simplified procedures for the separation of military personnel played a major part in the new system. The objective was to accomplish the separation of men and women from military service within 48 hours in such a manner that each would depart with a feeling of high regard for the Army.

Four pilot separation centers were established on 24 July 1944. To these centers were sent all military personnel being separated under existing War Department instructions for other than reasons of physical disability. Because of the importance of separation classification and counseling, a school on this subject was begun to provide trained personnel in this particular field. Separation tests were devised to evaluate a soldier's abilities and interests at the time of his separation from military service. The results were useful in giving information about possible job opportunities and in providing a record of a soldier's abilities at the time of his discharge from the service.

A manual providing uniform procedures at all separation centers was published in October 1944. Film strips were prepared giving information about National Service Life Insurance, the GI Bill of Rights, and the discharge process.

Three additional separation centers were established on 15 October 1944, and another nine began operations in November. The separation load declined from 48,000 enlisted men discharged in December 1944, to 9,400 in February 1945, when the War Department rescinded the provision for discharge of enlisted personnel for administrative reasons.

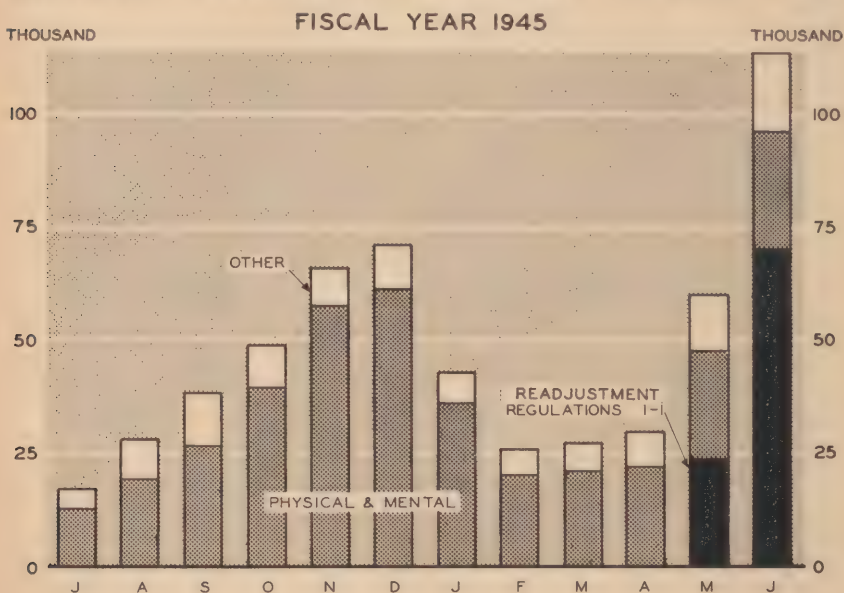
Section II, War Department Circular 370, 12 September 1944, permitted the separation of enlisted men in the zone of interior who no longer met the minimum physical standards for induction or who proved ineffective in their military assignments. This authority was withdrawn in January 1945. Thereafter, men might be released for

reasons of national health, safety, or interest in addition to physical disability.

With victory in Europe an enlisted man became eligible for discharge under Readjustment Regulations 1-5, when he had an adjusted service rating of 85 points or more and was not a critical specialist. Thereafter, six additional separation centers were established bringing the total by the end of June to 22. A twenty-third separation center was to be created in August 1945.

The number of personnel returned to the United States before VE-day under the rotation policy with more than 85 points under the

ENLISTED PERSONNEL RETURNED TO CIVIL LIFE



readjustment regulations proved so large that facilities at personnel centers were immediately taxed. While the actual time for processing continued to be 24 hours, there was some delay before the processing actually began. A backlog of 6 days' processing occurred at one or two separation centers early in June. Increased capacity at separation centers was immediately built up so that by the end of the fiscal year all separation centers were on a current basis. By 30 June 1945, nearly 121,000 enlisted men had been separated under readjustment regulations.

A short ceremony was introduced at all separation centers for the presentation of discharge certificates and for a brief expression of the War Department's appreciation of military services rendered.

Personnel Centers

War Department Section IV, Circular 329, 10 August 1944, authorized the Army Service Forces to establish personnel centers at 18 posts in the United States on 1 September 1944. These centers com-

bined reception centers, reception stations, and separation centers. A single officer was named to command these activities in order to effect maximum economy in utilizing medical, financial, supply, and processing staffs in handling the flow of personnel through these stations. By the end of the year there were 22 such personnel centers. In many instances a fourth activity was added —an induction station. All personnel centers operated under post commanders.

CHAPLAINS

In the fiscal year 1945 chaplains throughout the Army conducted some 1,850,000 religious services, with a total attendance of over 100,000,000. Pastoral contacts numbered another 85 million in the year. During the fiscal year 37 chaplains were killed in battle or died from wounds, bringing the total number to 62 during this war. Another 13 died from accidents or illness and four while detained by the enemy. One hundred sixty-three were wounded in action and six were missing, and over 850 decorations were awarded in the year. These statistics indicated clearly the grim nature of the service in which chaplains were engaged.

By 30 June 1945, there were some 8,000 chaplains on active duty with the Army, a net gain of 500 in the year. In the latter part of 1944, a number of religious bodies made more than usual efforts to bring increased numbers of their clergymen into the Chaplaincy. There was some drop in new applications after VE-day, but less than was anticipated. The qualifications for appointment were modified during the year in order that graduates of recognized theological seminaries might be appointed if they had had 3 years of experience in a student pastorate under the supervision of a teacher or other competent person.

A Chaplain Board was established late in 1944, to conduct experiments with important items of Chaplain equipment. The board was located with the Chaplain School. Particular attention was given to adapting equipment to war conditions in the Pacific. The board also prepared training literature and studied various means of increasing the effectiveness of chaplains in the field.

In addition to the standard equipment issued to chaplains, some \$300,000 was expended during the year on chaplain supplies by the Chaplains Activities Fund. About 150 million dollars was provided the Quartermaster General for the purchase of communion sets and ecclesiastical appointments for Chapels. Ports of embarkation received an allotment of \$13,000 for the purchase of equipment and supplies to be used on Army transports. Another \$20,000 was spent on the purchase of articles by the Chief of Chaplains in response to special requests. The size and weight of Army testaments was reduced during the year and another 4,800,000 copies were obtained.

A religious fund was established in the Office of the Chief of Chaplains with money drawn primarily from unexpended balances in the religious funds of deactivated units. In this way religious funds donated for the advancement of religious work will be used as intended by the donors when balances remain unexpended in unit funds.

The year 1945 was the most important one to date in the information and education services of the ASF. The various programs for the use of oversea commanders were extended as the Army became fully deployed, while immense preparations were made for the new needs to be met after victory in Europe. During the year, also, important changes were made in the organizational arrangements for handling information and education activities. Commanders of all echelons in all commands displayed an increasing appreciation of the need to develop the highest possible state of mental alertness and enthusiasm among all their troops.

The oversea conditions whose needs had to be met by the Information and Education Division were quite varied during the year. In Europe, there was almost constant activity of breakneck speed from the day of the invasion of the Normandy Beaches on 6 June 1944, until the final surrender of the German high command was officially announced on 8 May 1945. Combat and supply problems of unprecedented size faced the American armies. Temporary checks and reverses added to the fatigue of troops whose energy was being constantly drained. Whether in combat or on supply lines, troops had little or no time for organized discussion. The information and education program necessarily had to be based upon mass media which could reach the troops individually wherever they were. Newspaper and radio services were expanded as the soldiers advanced. Although the advance was less spectacular in Italy, the same problems appeared.

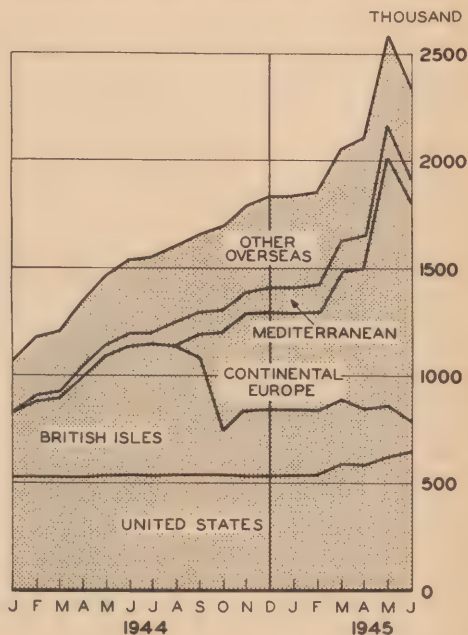
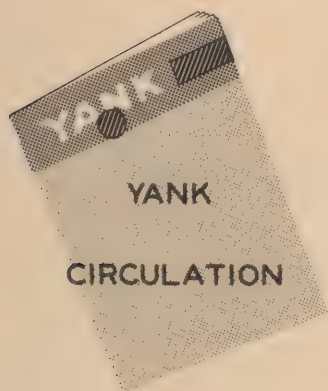
The war in the Pacific to the end of the year was not a vast land campaign but rather a series of sudden strikes followed by the consolidation of small land masses and their rapid conversion for use as a new base from which to blast Japan from land, sea, and air. Garrison forces were small and distances vast. In the Pacific the soldier's lot was one of monotonous routine on either security or supply duty at some isolated base, with short periods of intensive activity with each new drive forward. The information and education program of the Pacific was designed to meet these particular conditions.

Nor were the problems of information and education in a command proportionate to its strength. Visits in the India-Burma and China Theaters during the year demonstrated this only too clearly. American soldiers suddenly transplanted to a land and a culture so different from their own, and involved in a phase of the war which seems far removed from direct attack upon the enemy had a compelling need for orientation and for constant news about the other fronts and the homeland. At the end of the fiscal year the Information and Education Division was giving particular attention to the training of a staff and the provision of special programs to meet the requirements of these theaters.

Within the United States itself still another type of program was necessary in order to build an appreciation of their contribution to the war effort among the soldiers engaged in training activities and in supply and service operations.

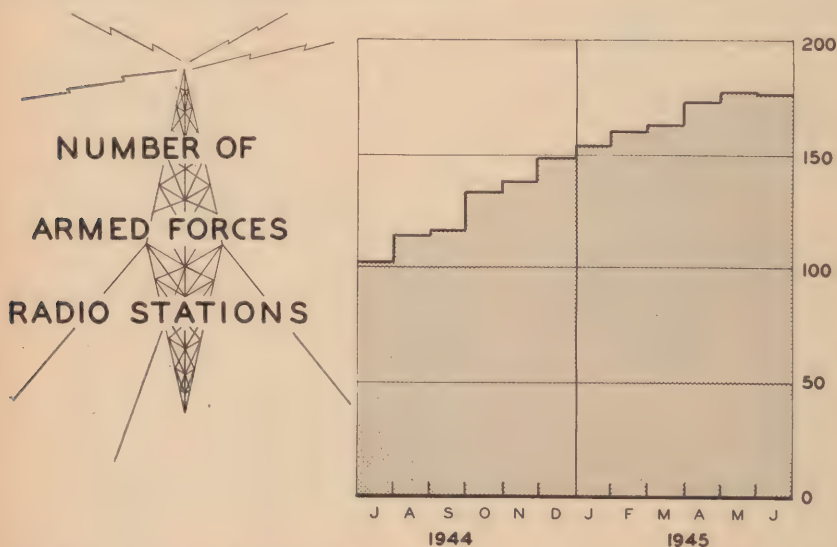
The newspaper publications of the Army expanded their circulation during the fiscal year. YANK, the Army weekly, grew from a total circulation of 1 million copies to 2,700,000 by the end of the year.

New editions were established at Paris and at Strasbourg in the European Theater in order to avoid placing an additional strain on the overburdened supply lines stretching back to London. The new editions gave the special coverage to the frontline troops that they deserved. New editions were also begun at Saipan and Manila. The total number of YANK editions all over the world increased to 16. The home office of YANK in New York continued to prepare about 80 percent of all copy used around the world. During the year the Town Hall award for "distinguished service in the field of information and education to the armed forces" was presented to YANK.



Stars and Stripes, the daily newspaper, likewise followed the Army across the Channel after D-day, and by May 1945, was distributing 1,300,000 copies each day from four printing plants in France and Germany. Both the size and circulation of YANK and of *Stars and Stripes* overseas were limited only by the supplies of paper available to them. Both received constant encouragement and support from oversea commanders, since they realized the contribution which a steady flow of reliable news was making to the morale of their troops. In the Pacific, the various theater commanders had long planned to publish daily newspapers as soon as the military situation permitted. On 14 May 1945, the first edition of *Stars and Stripes* to appear in the Pacific was published in Honolulu. Additional editions were to be printed on Saipan and Okinawa as soon as the printing equipment already shipped there could be installed. A fourth edition was planned for appearance in Manila about 1 October 1945. By that time virtually every major base in the Pacific will be covered by an Army daily written by and for soldiers.

The Army News Service, also with headquarters in New York City, continued to provide full domestic and international coverage of news for the use of military newspapers. By the end of the year, the daily copy cabled overseas averaged 80,000 words. A new section of the Service was organized to provide special feature and pictorial service, with the main accent on news of the activities of the home front. Newspapers published by divisions, other troop units, and posts overseas and in the United States received feature materials, news, and technical assistance from Camp Newspaper Service. More than 1,000 new papers, including Marine, Navy, and Coast Guard publications, requested this service in the year 1945, bringing the total clientele to more than 3,000. The materials supplied by this service were varied enough to fulfill the needs of mimeographed, photo-offset, or letterpress publications of all sizes.



A new specialized clientele for news activities was recognized during the year—the combat veteran hospitalized in the United States. A weekly, entitled “Outfit,” began distribution to all hospitals in the United States where the sick and wounded from overseas were receiving treatment. This weekly confined itself exclusively to reporting the activities of units to which its readers were formerly attached. By the end of the year, its circulation totaled nearly 60,000, while its readers were at least three times that figure.

The radio was still the most important medium for reaching troops quickly and completely. By VE-day there were 52 armed forces radio stations in the European Theater offering an average of 12 hours a day of the best programs that America could produce, interspersed with hourly newscasts. Orientation programs based upon “Army Talks,” a weekly combat orientation pamphlet published in Paris, were also conducted over the radio. New radio stations were established at Iwo Jima, Okinawa, and Manila. By the end of the year there were a total of 177 oversea stations of the Armed Forces Radio Service rebroadcasting programs sent out from the United States as

well as providing their own broadcast material. In addition to these stations, there were more than 200 cooperating government and commercial stations. When it was discovered that B-29 pilots homeward-bound from Japan were using the powerful OWI station at Saipan to guide them in, the Armed Forces Radio Service arranged for the operation of this station on a 24-hour basis with transcriptions provided from the United States.

While the responsibility for the operation and the programming of radio stations belonged to theater and base commands, the production of radio materials both for short-wave broadcast and for transcriptions was concentrated in the United States. The Armed Forces Radio studios in Hollywood, San Francisco, and New York, by the end of 1945, were producing 28 hours a week of original programs, and adapting an additional 41 hours a week from programs of the commercial networks. A total of 73,290 transcriptions a month was being sent by air to Army stations all over the world and to the Atlantic and Pacific fleets. Short-wave broadcasts through powerful OWI transmitters on both coasts totaled 4,823 hours per month. Short-wave news broadcasts slowed to dictation speed in order to permit listeners to copy off the messages in longhand provided the main source of news for many unit newspapers in the Pacific and for most ships at sea.

To an increasing degree during the year the attention of the Armed Forces Radio Service was concentrated on the production of original education and orientation materials and on the adaptation for Army use of similar programs produced by the commercial broadcasting companies. The use of radio for this purpose was still in the experimental stage at the end of the year. Too little research had been done to provide a guide on the optimum use of radio as a channel for education and orientation activities. Yet the ready response of soldier listeners to certain experimental programs seemed to justify more attention to this field. By the end of the year, the Armed Forces Radio Service was producing five original programs of this kind each week; in addition it was adapting an average of four half-hour programs weekly from commercial network productions. The radio will carry an increasing share of the orientation and information effort in the coming months, especially in reaching troops in isolated areas.

If not the most numerous, certainly the most devoted audience of the Armed Forces Radio Service was patients in Army hospitals. By June 1945, all large general hospitals had their own private carrier systems for reaching each ward. They were furnished with original radio materials for rebroadcast within the hospitals.

Newsmap, the weekly map of the war fronts and one of the oldest news services of this war, increased its circulation during the year by approximately 50 percent. In addition to domestic and foreign editions of which there were 10 by June 1945, *Newsmap* also published two special editions, one printed in Spanish and one with highly simplified legends and text for men receiving illiteracy training. A series of posters on many different subjects from savings to non-fraternization were prepared and furnished by the Information and Education Division at the request of appropriate Army agencies.

"Army Talk" became the standard guide for the mandatory weekly discussion groups held by unit commanders in the United States. In response to numerous requests, this publication was expanded

from four to eight pages. The information contained in it served as the basis for discussion groups dealing with all the subjects of current interest from the progress of the war to the United Nations Conference on International Organization in San Francisco. "Army Talk" was extensively used also in oversea theaters either in its original form or with editing and additions to fit the particular situation of the oversea theater. During the year 24 round-table discussion pamphlets were published by the Information and Education Division for distribution to troops. Prepared by the American Historical Association, these pamphlets were written to provide materials for voluntary soldier discussion groups. Such subjects were covered as "Does It Pay To Borrow?" "What is Propaganda?" "Do You Want Your Wife to Work After the War?" and "Our Russian Ally."

The series of seven orientation films entitled "Why We Fight" was completed during the year with the release of the seventh film, "War Comes to America." For the use of troops to be deployed to the Pacific, a special film, "Your Enemy, Japan," was prepared. "Why We're Here" was produced to explain the military mission to troops stationed in the China and India-Burma Theaters. Another film, "This is the Philippines," was sent to the Pacific for the use of General MacArthur's command. To assist the Commanding General of the European Theater of Operations in the enforcement of the non-fraternization, a film, "Your Job in Germany," was made for distribution solely to occupation troops. In addition, the biweekly Army-Navy Screen Magazine was continued in order to give feature coverage to both the war and the home front from a strictly soldier point of view. A special weekly package of 16-mm education and entertainment shorts continued to make its world-wide circuit.

The Story of the Year

For the Army, the most important news story of the year was the final plan for redeployment and readjustment after the defeat of Germany. The complete story was ready for release when the plan was officially declared in operation on 12 May 1945. This effort revealed clearly the extent to which the Army had succeeded in creating media for bringing news to the soldier wherever he might be.

The basic explanation of the plan was presented in a feature film entitled "Two Down and One To Go" which was distributed to all film libraries in the fall of 1944, with instructions to hold the prints secure until instructions were received from the War Department to show the film to all military personnel. The same information was also printed in a pamphlet under the same title.

This pamphlet was stockpiled throughout the world in quantities sufficient to permit distribution to each soldier. This film and pamphlet described the system which had been set up to determine what men might be released from the Army after the defeat of Germany. It also explained the need for a large Army to continue the war against Japan. To supplement this film, a second one was produced entitled "On To Tokyo" for showing a month later. This film presented the most commonly anticipated questions about redeployment plans and provided direct answers from the Chief of Staff, the Supreme Allied Commander in Europe, and the Commanding Generals of the Army Ground Forces, the Army Air Forces, and the Army Service Forces.

The story of the war which had been won in Europe and the war still to be won in the East was graphically told in a special VE-day issue of YANK. The plates for this issue were air mailed to oversea editions well in advance. It presented a complete explanation of re-deployment and readjustment regulations with an exposition of the hard facts which made further service necessary for the majority of soldiers.

"Army Talk" contributed a special issue on the plan which was broadcast to troops stationed in the zone of interior and was adapted for use by oversea officers. The Army News Service and the Camp Newspaper Service provided their client newspapers with materials similar to those used in the special issue of YANK complete with cartoons, maps, and pictures. For those out of reach of the printed word, radio carried the big news by short-wave and by transcriptions. Radio also carried the first word of the points assigned for length of service in the Army, length of service overseas, combat awards and decorations, and parental status, as well as the tentative critical score established for separation.

It was of major importance to the War Department for each soldier to understand the redeployment and readjustment operation and to accept it as basically fair to all military personnel. Research studies were begun 14 days after VE-day in all theaters to define the specific parts of the program on which troops needed more information.

The Army Education Program

In anticipation of victory in Europe, the Information and Education Division for more than a year had been planning the details of an Army education program. This program was intended to provide training opportunities of a nonmilitary nature to the soldiers in Europe awaiting redeployment or movement back home for separation. The program was put into effect in Europe on 11 June 1945.

The backbone of the Army education program was the arrangements made for instruction to be given by unit commanders. Just as the captain of a company was responsible for the training of his troop unit for successful operation in combat or in service, so the unit commander was expected to be the leader in the nonmilitary training of his troops before their dispatch to the Pacific or return to the United States. The reasons for the responsibility thus placed upon the unit commander and the basic essentials of the Army education program were explained in films produced by the Signal Corps for the Information and Education Division. In addition to the plans for unit schools, arrangements were also made for technical training centers and university study centers. The needs for texts and other materials for this program were calculated and orders placed. By 1 June 1945, there were 5 million textbooks in Europe or in transit. By that time, the Information and Education Officers in the European Theater reported that about 300 unit schools were already in operation and that another 900 were almost ready to open.

The Army education program was intended to provide useful and interesting occupation for the troops who were surplus to the needs of the theater, as well as those designated for occupation duty. The unit schools could be established wherever a thousand or more troops were located. The texts and teaching materials were prepared so that

they could be used by unit officers. These schools provided an opportunity to the rank and file to renew old work skills, to acquire new ones, or to fill up gaps in their general education.

Two university centers were to be opened, one in England and one in France, by 15 August 1945. These centers were to operate five consecutive courses each of 2 months' duration. Each would accommodate 4,000 students per course. The curriculum was similar to that of American colleges. Enrollment was open on a quota basis to the men in all the major commands who had completed high school work and who were recommended for such additional training. A third center was to open at Florence for the attendance of troops in the Mediterranean Command.

A centralized technical school was scheduled to open at Tidworth, England, about 1 August 1945. Here, training in various trades was to be given to men, also selected on a quota basis, who had journeyman status in a particular trade or who had completed 3 years of apprenticeship. In determining the latter qualification, credit would be given for Army training in any trade. This school would have a quota of 4,000 per course and would offer five consecutive courses.

For the most part, the teaching personnel for the University centers and the technical school was drawn from the Army. Arrangements were made for key administrative and supervisory positions to be filled by civilians loaned to the Army by American universities and by leading industrial firms.

Participation in any phase of the education program was wholly voluntary. The separation of any individual from the service would not be delayed because of attendance at a school. In the unit schools all instruction was planned in blocks of 20 hours so that men expecting early shipment would be encouraged to enroll without fear of delaying their return home.

The Army education program was designed for operation only in inactive theaters, particularly the European and Mediterranean after VE-day. It could not be started in the active theaters where operations against the enemy were proceeding. Nevertheless, the first steps for planning such a program for use in all areas of the Pacific had already been taken.

Research

As in previous years, the Information and Education Division devoted much attention to research into soldier attitudes and in planning its programs based upon such information. It was a research project prepared by the Information and Education Division which sampled the opinion of soldiers all over the world and formed the basis for the development of the War Department's adjusted service rating card to be used in determining soldiers eligible for discharge after VE-day. Because this card was based upon the express preferences of soldiers throughout the world, it received wide-spread approval not only from troops themselves but from the public at large. Inquiries into the postwar plans of soldiers helped to guide the preparation of information materials in the Army education program.

A special pamphlet was prepared for distribution to Information and Education Officers throughout the world in May 1945, outlining the principal morale problems to be expected after the defeat of

Germany and during redeployment. This pamphlet represented in part a careful analysis of soldier attitudes and how they might be affected by information activities. The experience after World War I was also reviewed.

Organization

The Information and Education Division in Headquarters, Army Service Forces, was a service agency providing materials for the use of commanders overseas and in the United States. By section V, ASF Circular 256, 9 August 1944, the name "Morale Services Division" gave way to the more descriptive title "Information and Education Division." War Department Circular 360, 5 September 1944, made provision for full-time officers in each command down to the level of a regiment who were officially designated as Information and Education Officers. With the materials provided by the ASF and as staff officer to his own command, these officers were expected to conduct an information and education program reaching all troops.

These changes for the first time provided a continuous channel for the flow of information and education materials from the War Department through military commanders to the individual soldier. The Army no longer regarded information and education services as "extras" to be offered when possible, but rather as "musts" contributing directly to the accomplishments of the Army's mission. As a result of War Department Circular 360, information and education sections were set up in the Army Ground Forces and in the Army Air Forces and in all overseas commands, if they had not already been established. The Information and Education Division in the Army Service Forces retained full responsibility for those operations which had to be performed under centralized control. These were chiefly the formulation of basic policies, the production of materials requiring highly specialized staffs and extensive facilities, and the training of personnel. The use of all these materials was a function of command. Oversea theaters' information and education staffs concentrated on the use of War Department materials and services and in adapting them to their particular needs. Many produced special materials required by their particular mission or situation. Information and Education Officers overseas and in the Ground Forces and the Air Forces kept the War Department informed about their special needs and about the materials they desired.

The clarification of responsibility and the provision of clear-cut channels for the conduct of information and education work gave a great impetus to the whole service during 1945.

PERSONAL AFFAIRS

Assistance to military personnel and their dependents in the United States expanded considerably in 1945. More and more attention was given to the use of various media to inform both groups about their privileges and about the benefits available to them.

During the year a total of more than 3,700,000 inquiries on personal affairs problems were handled by the various personal affairs offices and branches in the United States. Over 30,000 inquiries were handled by the Personal Affairs Division in Army Service Forces

Headquarters alone. About 40 percent of all inquiries concerned family allowance claims, government insurance, pay allotments and government bonds. The next largest single category of questions involved legal matters which were handled by legal assistance officers at Army installations. These amounted to nearly 7 percent of the total. The percentage of inquiries on other personnel problems during the fiscal year were as follows:

	Percent
Maternity care.....	3.6
Red Cross assistance.....	3.4
Arrears.....	2.6
Tax problems.....	2.3
Employment.....	2.5
Medical assistance.....	2.2
Mustering-out pay.....	2.2
Death gratuities.....	1.8
Pensions.....	1.6
Financial assistance from the Army Emergency Relief Fund.....	1.4

Many different means were employed in order to keep personal affairs officers and military personnel informed about the latest changes in service privileges and benefits. Information programs were conducted by personal affairs officers at military posts. One such program was prepared for use in the period from August 1944, through February 1945, and another program to be used from March through August 1945. The materials provided personal affairs officers by ASF Headquarters included suggestions for talks by commanding officers, suggested articles on personal affairs subjects to be included in post newspapers, posters for display on bulletin boards, and talks to be given by personal affairs officers. Reading materials on personal affairs subjects were also included.

A monthly bulletin, "Personal Affairs Division Information Memorandum," informed field officers of the most recent developments and of matters of current interest affecting personal affairs. Important changes in War Department and government regulations, rulings by the Veterans Administration, and services offered by public agencies were thus published. Each bulletin also contained a page on activities of special interest to women's volunteer committees. On 1 July 1945, a directory was published and distributed containing a brief statement of the benefits made available to servicemen and dependents by the Federal Government and by the laws of each of the 48 states, together with the name and location of the agency administering each program. The revision of two War Department pamphlets was begun combining the information previously contained in pamphlet 21 4, "Information for Soldiers Going Back to Civilian Life," and 21 24, "Explanation of the Provision of the GI Bill of Rights." When issued, the new publication was to be a joint booklet for the use of all armed forces personnel to acquaint them with their privileges and obligations upon return to civilian life. A previous document of the House of Representatives of the 78th Congress was revised and republished as House Document No. 134, 79th Congress, "Handbook of Servicemen and Service Women of

World War II and Their Dependents, including Rights and Privileges and Benefits of Veterans of World War I and Their Dependents."

Radio scripts for use by the Armed Forces Radio Service were another means of conveying information to military personnel.

A liaison office of the Personal Affairs Division located at the Office of Dependency Benefits in Newark, New Jersey, handled hardship cases and special inquiries from posts, camps, and stations. Some 27,000 such cases were reviewed during the fiscal year 1945 and the correct information returned to the inquiring personal affairs officer. A similar arrangement was made during the fiscal year to handle questions concerning death gratuities and the pay allotments of missing military personnel through the establishment of a liaison office with the Office of Special Settlement Accounts in New York City.

Particular attention was given in 1945 to the personal affairs problems of patients in hospitals. In March 1945, the Chief of Staff requested the Commanding Generals of the Ground Forces, Air Forces, and Service Forces to improve the handling of patients returned from overseas in order to show the interest of each command in the personnel trained by it. As a result, liaison personnel of each command were assigned to every general, regional, and convalescent hospital to greet, interview, and counsel patients on their personal affairs and to assist classification officers in reassignment after release from the hospital. The Personal Affairs Division of the Army Service Forces provided information materials to these liaison personnel. Greeting cards from each commanding general were printed and special posters and booklets were provided.

Women volunteer committees made arrangements for calls upon the dependents of all deceased military personnel in order to help them in obtaining necessary assistance. The work of this committee was carried on in close harmony with the various chapters of the American Red Cross to whom were referred all cases which could be handled by that agency. Requests for financial assistance were referred to the Army Emergency Relief.

Close relations were also maintained with the Veterans' Administration, the Children's Bureau of the Department of Labor, the Selective Service System, and the U. S. Employment Service.

As a result of a conference of personal affairs officers in May 1945, additional efforts were planned to provide informal materials to personal affairs officers and to the soldiers themselves. A card index subject file of personal affairs information was to be distributed on a current basis to all personal affairs officers at military installations. Additional posters for use in hospitals and at military posts were to be prepared to keep soldiers informed of the services available to them through personal affairs offices. The Women's Volunteer Committee was to expand its activities to handle problems arising out of the redeployment and readjustment program.

SPECIAL SERVICES

Army Exchange Service

The supply of Army exchanges in oversea theaters was increasingly difficult during 1945. To some extent these exchanges were able to obtain materials and food and beverages for sale to military and

attached civilian personnel from local sources or through the Quartermaster of the theater. The procurement offices of the Army Exchange Service located in New York and San Francisco placed orders for nearly \$100,000,000 worth of merchandise to be shipped to overseas exchanges during the fiscal year. Another 3 million dollars in orders was placed on behalf of the India Supply Mission to be shipped to canteens operated by the British in India. Most of these purchase orders were placed with leading manufacturers and suppliers having price agreements for the supply of domestic exchanges. These price agreements enabled both the Army Exchange Service itself and post exchanges throughout the country to place orders at prices which were comparable to those enjoyed by the largest buyers of such merchandise.

The Army Exchange Fund made prompt payments to merchandisers for the account of overseas exchanges. In this way cash discounts were earned which more than equalled the fees and interest paid to the Army Exchange Fund by overseas exchanges. The Fund maintained running current accounts for all overseas exchanges. The Quartermaster Corps, the Signal Corps, and the Medical Department were especially helpful in meeting the needs of overseas exchanges for merchandise.

The Individual Gift Service previously inaugurated by the Army Exchange Service handled nearly 1,500,000 orders in 1945. These orders were placed by individual soldiers overseas with their local exchange. The orders were then transmitted to the United States where the desired gift was purchased and delivered to friends and relatives in this country. The purchases thus made amounted to 6.5 million dollars during the year.

The various services to post exchanges operated by Army posts and troop units in the United States were continued in the fiscal year 1945. Nearly 17 million dollars of direct purchases were made on behalf of these exchanges. It was estimated that domestic exchanges saved between \$750,000 and \$1,000,000 during the year from the comprehensive insurance program installed throughout the United States by December 1944. Some 922 price agreements were in effect by June 1945. The Army Exchange Service particularly aided exchanges in obtaining uniforms for officers. Nearly 2 million dollars worth of cloth was purchased for manufacturers of "made to order" uniforms supplying post exchanges.

The insurance policy for overseas exchanges was extended during the year to provide material damage and collision insurance on Exchange-owned automotive equipment. This extension brought about a savings of better than 50 percent in the premium formerly paid by exchanges purchasing this kind of insurance. Altogether, during the fiscal year 853 insurance claims for a total of \$756,000 were processed and collected from insurance companies by the Army Exchange Service on behalf of overseas exchanges.

The total volume of retail sales by all exchanges during the fiscal year was more than a billion dollars. The gross income of domestic exchanges was about \$720,000,000. The number of exchanges in this country declined from 618 to 568 and the number of civilian employees from 65,000 to 48,000.

BALANCE SHEET FOR ARMY EXCHANGES IN THE CONTINENTAL UNITED STATES

(25 June 1945)

ASSETS		
<i>Current assets</i> -----		\$67, 016, 694. 18
Cash and securities-----	\$28, 971, 955. 33	
Notes and accounts receivable-----	4, 062, 563. 25	
Inventory-----	33, 887, 249. 78	
Other current assets-----	94, 925. 82	
<i>Fixed assets (net value)</i> -----		2, 942, 864. 94
Furniture and fixtures-----	\$19, 053, 744. 48	
Other-----	6, 561, 969. 44	
<i>Total</i> -----	26, 615, 713. 92	
Less reserve for depreciation-----	23, 672, 848. 98	
<i>Prepaid and other assets</i> -----		1, 998, 840. 01
<i>Total assets</i> -----		<u>71, 948, 399. 13</u>
LIABILITIES		
<i>Current liabilities</i> -----		26, 147, 040. 16
Accounts payable-----	\$22, 146, 677. 93	
Other-----	4, 000, 362. 23	
<i>Deferred liabilities</i> -----		593, 613. 14
<i>Reserves</i> -----		81, 628. 21
<i>Net worth</i> -----		45, 126, 117. 62
<i>Total liabilities and net worth</i> -----		<u>71, 948, 399. 13</u>

BALANCE SHEET FOR ARMY EXCHANGES OUTSIDE THE UNITED STATES

(25 June 1945)

ASSETS		
<i>Current assets</i> -----		\$111, 762, 286. 27
Cash and securities-----	\$42, 130, 145. 92	
Note and accounts receivable-----	10, 666, 780. 31	
Inventory-----	58, 336, 474. 65	
Other current assets-----	628, 885. 39	
<i>Fixed assets (net value)</i> -----		668, 615. 49
Buildings, furniture and fixtures-----	\$4, 108, 370. 18	
Less reserve for depreciation-----	3, 439, 754. 69	
<i>Prepaid and other assets</i> -----		909, 632. 08
<i>Total assets</i> -----		<u>113, 340, 533. 84</u>
LIABILITIES		
<i>Current liabilities</i> -----		58, 741, 868. 06
Accounts payable-----	\$51, 332, 976. 96	
Other-----	7, 408, 891. 10	
<i>Deferred liabilities</i> -----		11, 557, 001. 70
<i>Reserves</i> -----		4, 332, 240. 94
<i>Net worth</i> -----		38, 709, 423. 14
<i>Total liabilities and net worth</i> -----		<u>113, 340, 533. 84</u>

PROFIT AND LOSS STATEMENT

Army exchanges in the United States in the year ending 25 June 1945

Direct sales.....		\$675, 293, 201. 25
Less cost of sales.....		531, 777, 996. 61
Gross profit.....		143, 515, 204. 64
Direct departmental expenses.....		86, 788, 844. 82
Wages and salaries.....	\$71, 654, 333. 54	
Other.....	15, 134, 511. 28	
Overhead and general expenses.....		34, 498, 585. 47
Wages and salaries.....	\$19, 677, 780. 54	
Other.....	14, 820, 804. 93	
Total expenses.....		121, 287, 430. 29
Operating profit.....		22, 227, 774. 35
Other income.....		11, 254, 037. 96
From concessions.....	\$4, 100, 190. 58	
From amusement machines.....	2, 732, 461. 70	
Purchase discount.....	1, 863, 291. 86	
Other.....	2, 558, 093. 82	
Net profit.....		33, 020, 371. 20

Net profit as percent of direct sales—4.89 percent

PROFIT AND LOSS STATEMENT

Army exchanges outside the United States in the year ending 25 June 1945

Direct sales.....		\$329, 276, 327. 95
Less cost of sales.....		288, 727, 596. 43
Gross profit.....		40, 548, 731. 52
Direct departmental expenses.....		6, 910, 079. 87
Overhead and general expenses.....		12, 444, 873. 35
Total expenses.....		19, 354, 953. 12
Operating profit.....		21, 193, 778. 40
Other income.....		3, 600, 302. 85
From concessions.....	\$348, 687. 20	
From amusement machines.....	41, 044. 50	
Purchase discount.....	590, 850. 84	
On special orders.....	27, 541. 45	
Other.....	2, 592, 178. 86	

Miscellaneous profit and loss adjustments, prior periods..	*284, 469. 75
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Net profit.....	24, 509, 611. 50
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Net profit as percent of direct sales—7.44 percent

*Denotes red figure.

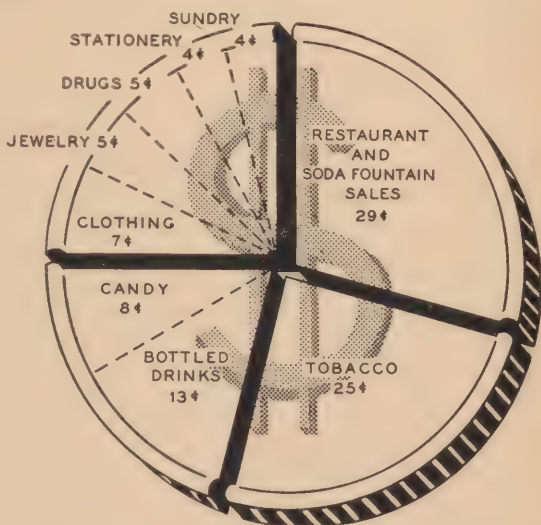
Fifty-four percent of each dollar spent in domestic exchanges went for tobacco and restaurant and soda fountain services. This was an increase of 12 percent over purchases in the preceding year for these items.

Major changes were made in the policy on handling surplus funds in exchanges. A new formula was put in effect for determining funds available over actual working capital needs of domestic exchanges. As a result, enough surplus funds were obtained by the

Army Exchange Fund to liquidate completely the debt owed to the Defense Supply Corporation which totaled \$12,800,000 at the beginning of the fiscal year. By 30 June 1945, all exchanges, both those overseas and in the United States, were operating completely on their own capital or on funds borrowed from the Army Exchange Fund. With the liquidation of the debt to the Defense Supply Corporation the flow of excess funds to the Army Exchange Fund was reduced so that by the end of the year the main source of income to the Army Exchange Fund were fees and liquidation proceeds. The monthly fee required from each domestic exchange was reduced to one-quarter of 1 percent of the net sales of exchanges during 1945. Oversea exchanges paid one-half of a 1 percent fee on their purchases. The revenue from both sources adequately covered all operating costs for the Army Exchange Service.

HOW THE DOLLAR WAS SPENT IN THE POST EXCHANGE

FISCAL YEAR 1945



A major problem for the Army Exchange Service during the fiscal year 1945, was supervision of the operation of canteens in prisoner of war camps in the United States. This responsibility was vested in the Special Services Division in June 1944. After that time, as far as practicable, canteens were operated in the same manner as post exchanges. Canteens at prisoner of war camps were authorized to purchase specified types of merchandise from the nearest Army exchange on a 90-day credit basis until sufficient receipts were on hand from sales to permit current payments. As far as possible, canteens were operated by prisoner of war personnel under the supervision of the local exchange officer on the post. They kept their own separate sets of books and records and submitted monthly statements. Purchases made by prisoners were paid for by coupons only; the merchandise bought was carefully restricted to items generally available in unlimited quantities to the American public. Direct sales by prisoner of war canteens expanded from some \$2,000,000 per month at the beginning of the year to more than \$4,000,000 per month at

the end of the year. Dividends available from the profits earned by canteens were transferred to prisoner of war funds established at each camp. Upon the liquidation of a prisoner of war canteen the remaining canteen funds were transferred to a central prisoner of war fund.

Complete procedures for the liquidation of post exchanges were distributed to all domestic and oversea exchanges during the year. These provide for the orderly closing out of all exchange activities and the payment of all current liabilities.

Army Motion Picture Service

In 1945, the Army Motion Picture Service distributed 185,000 programs of 35-mm entertainment motion pictures. Under an agreement with the motion picture industry, films were available for showing in Army theaters in advance of their national release. The estimated attendance in the United States was 164,000,000, about 28 percent less than that for 1944. The gross receipts from admissions were over \$24,000,000.

A contract was made with the film industry during the year whereby 35-mm motion picture films were made available to the armed forces in the European Theater of Operations. No admission was charged but a rental payment was made on the basis of 3 cents per person in uniform attending. The same service was to be extended to the Mediterranean area and to the Pacific theaters. These films, likewise, were current or prerelease films.

At the end of the year there were 922 War Department theaters in operation at 585 posts. These included 70 permanent theaters. Some 250 theaters were closed temporarily and 182 permanently with the decline of troop strength in the United States.

Maintenance service increased somewhat during the year with nearly 6,000 service visits to posts throughout the United States. The sale of coupon books was discontinued on 17 February 1945, in favor of a straight cash admission price to all War Department theaters.

Civilian employees of the Army Motion Picture Service, who were not paid from appropriated funds, were afforded the opportunity to subscribe to a group insurance policy during the year. This policy included life insurance, accident insurance, sickness and hospitalization benefits. About 50 percent of the premium was paid by the Army Motion Picture Service and the remainder contributed by the employees. Over 90 percent of all employees had subscribed to the plan when it was made effective on 14 April 1945.

Athletics and Recreation

The Army Service Forces program to provide athletic and recreation facilities to military personnel was planned on a greatly increased scale during 1945 in anticipation of victory on one major front. The procurement of athletic supplies was accelerated so that by VE-day there was 7.5 million dollars worth of extra athletic equipment on hand in Europe for issue to troops. Preparations were also made for the biggest mass participation ever attempted in organized sports, soldier shows, handicrafts, music, and library activities.

At the same time an enlarged athletic and recreation program was arranged for all troops retrained in the United States prior to shipment

to the Pacific. Competitive sports were arranged for all troops, whether a part of the Army Air Forces, the Army Ground Forces, or the Army Service Forces. Camp facilities were improved where necessary and appropriate personnel assigned to posts in the United States. Civilian organizers from leading educational institutions in the United States were sent overseas to help conduct athletic staff schools in Paris and in Rome. Within 4 months nearly 1,500 selected officers and enlisted men were graduated from these schools.

The most widely distributed form of reading matter overseas was Council books and unit sets of magazines. The Council on Books in Wartime, representing American publishers and authors, arranged for the selection and sale to the Army at cost of small paper-bound editions of best sellers and other popular books. The cost was approximately 6 cents a copy. These Council books were dispatched to overseas units of company size and even to smaller detached units and hospitals in monthly packages containing 40 titles each. The number of books sent overseas each month increased from 2,000,000 in July 1944, to 4,400,000 in June 1945.

Unit magazine sets were distributed overseas on the same basis. A total of 28 popular magazines were included in each set. In order to save paper and cargo space, they were printed on light-weight paper, without advertising and in some cases in a small format. A monthly set contained an average total of 125 individual copies. The number of magazines shipped overseas increased from 5,800,000 in July 1944, to 12,000,000 in June 1945.

Library service in the European Theater was expected to increase greatly after VE-day. More than 715 general libraries of 500 books were dispatched and another 1,000 arranged for. In addition, 60 large libraries of 2,000 volumes each were being prepared at the end of the year for immediate shipment. Some 120 professional civilian camp librarians had been selected from posts throughout the United States to operate these larger libraries.

Council books were made available to all hospitals in order to provide them with an adequate supply of reading materials. In addition, each convalescent hospital was allotted \$7,000 for the purchase of reading materials. Books from inactivated posts were redistributed to hospitals and other military installations.

During 1945, there was a substantial growth in the popularity of shows produced and staged entirely by soldier personnel. In order to stimulate and assist in this phase of entertainment, the Special Services Division supplied a wide variety of materials and services. Two original musical productions were created and published complete with text, musical scores, scenic and costume designs, and full production directions. These shows were staged by many units both in the United States and overseas. Complete instructions on less elaborate productions were also sent overseas. Over \$100,000 worth of theatrical equipment and costumes were shipped to Europe as well as 20,000 copies of commercially published plays.

Since experience demonstrated that the production of soldier shows was stimulated by actual demonstration, three demonstration teams were sent to the European Theater, one to the Mediterranean, and one to the Caribbean. Three experienced civilian advisors also toured Southwest Pacific bases. A new type of soldier show entertainment

featuring outstanding enlisted personnel was developed and became known as "Jeep Show" units. One such unit of 54 men was sent to the European Theater and another of 15 men to the Mediterranean Theater. Both made enviable records touring the "fox hole circuit" playing close to the front lines.

In the field of professional entertainment, a total of 376 USO-Camp Shows units composed of 2,446 professional entertainers were sent overseas in 1945. This was about three times the number sent overseas in the previous year. The individual units included many well-known musical and legitimate productions such as "Anything Goes," "Oklahoma," "The Man Who Came To Dinner," and "Our Town." Within the United States 24 USO-Camp Shows units with 460 entertainers gave nearly 4,000 performances on the Victory Circuit. The 350 posts in the United States with a troop strength of 1,500 or more were provided with an average of one show per month. Seventy-three units with a total of 365 artists toured the 358 posts with a troop strength under 1,500. This second or "blue" circuit was discontinued on 12 May 1945, in order to provide for more entertainment units overseas. The hospital circuit received 20 units of 300 entertainers. These units were available every 2 weeks to all general and regional hospitals and redistribution stations. In addition, 90 stage, screen, and radio celebrities donated a total of 720 playing days to personal appearances at hospitals in the United States. Some 110 nationally known artists also visited hospitals making sketches of thousands of patients.

The demands for V-disks, specially made plastic phonograph recordings, increased greatly during 1945. Nearly 3 million were sent overseas compared with about a million records made available in 1944. Domestic distribution was confined to hospitals. A package containing 20 records each was shipped monthly to Army units overseas. Large quantities were also supplied to the Navy, the Coast Guard, and the Marine Corps. The Army-Navy Hit Kit, a publication of current and other popular songs, likewise gained in popularity. Each kit contained 1 folder with words and music and 50 folders with words only. More than a million were distributed during the year.

In cooperation with the Surgeon General, music activities were developed in hospitals as a part of the reconditioning program. Music appreciation groups were organized as well as classes teaching how to play various musical instruments. Other forms of patient participation were also used. For example, a series of special "sing along" records were made to foster group singing.

The supply of musical instruments continued to be critical throughout the year. Through the Quartermaster Corps more than \$4,000,000 worth of instruments and equipment were procured. In anticipation of a greatly expanded music program after VE-day, enough music was sent to Europe to supply a complete music library for four symphony orchestras of 100 players each. In addition, 320 sets of music were provided for volunteer concert bands, choral groups, string quartets, etc.

A marked increase in interest of all forms of handicraft occurred during the year. A total of 418,000 handicraft kits were distributed, each containing enough materials for 2 to 5 men working together. There were 14 types of kits including block printing, carpentry, clay

modeling, metal craft, wood carving, photograph developing, and pencil sketching. Many handicraft work shops were established which would provide sufficient materials for groups of 50 men working simultaneously. Salvage provided the bulk of the materials used in all types of handicraft centers and hobby shops.

An Army Arts contest was announced on 14 December 1944, open to all military personnel in the United States. About 9,000 entries were submitted. The regional prize winning exhibits were to be judged in July 1945, at the National Gallery of Art in Washington.

A 26 weeks integrated program was prepared during the year for use in the United States giving complete week-to-week schedules for athletics, soldier shows, music, handicrafts, and libraries. The program was put into effect by service commands from 3 September 1944, to 25 February 1945. Its success was so great that a second such program in printed form was prepared for a second 26 weeks beginning 1 March 1945. Complete participation records were kept during this program to provide data upon which to base future planning of all athletic and recreational activities.

The Special Services Division continued to work with the American Red Cross, the USO, the Joint Army and Navy Committee on Welfare and Recreation, and with veteran and civilian welfare organizations. In addition, civilian advisory committees in each major recreational field were established during the year to advise the Division in planning and executing various programs.

Chapter 7. COMMUNICATIONS AND PHOTOGRAPHIC ACTIVITIES

The Army Communications Service during the fiscal year 1945 met all the demands for rapid communication with both Europe and the Pacific. As fast as key points on the European Continent and in the Pacific were captured from the enemy, the Army Command and Administrative Network was expanded to link these with the United States and other points. The entire world-wide communications system was streamlined to handle a traffic volume which reached a peak of more than 50 million words a day. This was accomplished in large part by the extension of semiautomatic tape relay facilities and the application of a newly developed 100 words per minute technique to wire and radio teletypewriter circuits.

The Army Command and Administrative Network expanded its operations to the European Continent by means of temporary radio connections through London within a few hours after the invasion of 6 June 1944. As the campaign progressed, direct radio communications were established with Washington and other points on the Continent. The first radio teletypewriter circuit was operated from Valognes on the Cherbourg peninsula. Later, 50 kilowatt multi-channel systems were established with Paris and Frankfurt, and a single channel radio teletypewriter circuit was opened with Rheims. Toward the end of the calendar year 1944, communications with the Continent were augmented by the repair and diversion of a former German submarine cable from the Azores to Emden. The project was completed under extremely difficult technical and weather conditions. A 130-mile gap was closed in the vicinity of the Azores, a break was repaired off Brest, and the cable was diverted in the English Channel to terminate near Cherbourg. This cable proved of inestimable value during the critical period of the European campaign.

The northward progress of the war against Japan caused several major changes in the Army Command and Administrative Network. The Pacific terminal of a high capacity circuit from San Francisco was transferred in leap-frog fashion from Hollandia to Leyte and finally to Manila. This terminal was a seaborne single sideband radio station. In Manila, a 40 kilowatt transmitter shipped from Australia was added. The Southwest Pacific Areas were also connected by communications channels with China and India.

Parallel radio communications in the North Atlantic area were consolidated by the integration of Signal Corps channels with those of the Army Airways Communications System. The Airways System absorbed the transmission of administrative traffic along the route at a considerable over-all savings in equipment and personnel. Additional facilities were being installed at the end of the year to handle the large air movement of soldiers returning from the European Theater.

Streamlining of the communications system continued during the year. Four new major relay centers were added to the domestic teletypewriter network bringing the total to 20. Semiautomatic equipment installed in all these centers made it possible for the system to absorb the traffic of several independent networks without any appreciable increase in operating personnel. Investigation during the year revealed that the Army Airways Communications System and the Army Communications and Administrative Network employed different operating procedures in the semiautomatic tape relay transmission of messages. Thus, a message tape originating in one network and transferred to the other had to be reprocessed. The Deputy Chief of Staff of the War Department directed that one uniform tape relay procedure be installed by both services permitting rapid interchange of message transmission.

The Army Air Forces network headquarters was absorbed during the year and a nation-wide network established for the Military Air Transport System. Progress was also made in converting the Air Transport Service Command Network to relay operations. Major economies were also realized by diverting teletypewriter exchange (TWX) traffic to the Army Command and Administrative Network, with a net reduction of 169 TWX stations during the year.

After experiments in the War Department Signal Center, the 100-word speed equipment replaced 60 words per minute apparatus at several key points for wire operation in the United States. Later the equipment was also applied to radio teletype operation over circuits between Washington and Honolulu, Washington and Italy, and Manila and New Delhi.

Radio teletypewriter conference facilities were provided during the fiscal year at several key European headquarters, at Moscow, and at Leyte, Guam, Manila, Chungking, Honolulu, Rio de Janeiro, and San Francisco. Voice conference installations were made in California, Paris, Guam, Manila, and Frankfurt. A constant stream of fixed plant equipment was kept flowing during the year to all oversea theaters. By VE-day, installations in the European Theater had received 150,000 miles of copper wire, 3,500 miles of lead-covered cable, 1,400 teletypewriters and 883 positions on multiple and nonmultiple switchboards. Radio facilities included four multichannel, single sideband, 40 kilowatt systems, 59 teletype terminal sets, and 99 transmitters for radio teletype and other circuits.

In a number of instances, equipment had to be assembled and sent overseas in short order. On one occasion, nine mobile and 25 portable weather stations with complete radio communication were shipped to Russia within 11 days from the day of requisition. The material consisted of 1,800 different items weighing more than 700 tons and filling 68 freight cars.

As in the past, the Signal Corps handled the installation and operation of telephone, teletype, and conference facilities for the major meetings of allied leaders during the year. For the second Quebec conference, direct telephone lines connected Quebec and Washington with other facilities extending throughout the world. Unique problems were encountered at the Malta and Yalta conferences, since each was held at a place lacking in communications facilities and far removed from any station in the War Department networks. For

example, approximately 250 tons of equipment had to be transported to the Crimea, 20 tons of which was sent by air to Naples and thence by boat. This included radio transmitters and receivers, teletypewriter apparatus, and a complete telephone distribution system including poles, wires, switchboards, power equipment and vehicles. Radio apparatus was located aboard a communications ship some 65 miles from the actual scene of the conference. Despite adverse weather and terrain, the communications system was placed in operation at Yalta within 9 days. This was the first time that long-range radio teletypewriter equipment was installed and operated effectively aboard a ship. The telephone network covered an area of roughly 2,376 square miles with land line telegraph circuits crossing two mountain ranges.

Special facilities were provided by the Signal Corps for the State Department to use at the United Nations Conference on International Organization held in San Francisco. A Signal Center installed in the Veterans Memorial Building provided a teletypewriter circuit to Washington. Other circuits connected State Department offices with the San Francisco Signal Center. TWX facilities were also provided as well as local tie-ins to the Navy network and to commercial facilities.

The most elaborate arrangement in the history of broadcasting was set up for the release of information on the invasion of the Philippines, 19 October 1944. A complicated network was necessary to be sure that the signal would get through despite great distances, the peculiarities of radio waves in the area, and unreliable atmospheric conditions. A 3-kilowatt transmitter was installed aboard a cruiser to relay the signal from the beach to a special broadcast ship which in turn used a 10-kilowatt transmitter to relay the signal to the War Department network by way of Hollandia, Brisbane, and Honolulu.

President Truman's proclamation on 8 May 1945 announcing the defeat of Germany and the statements of military and naval leaders throughout the world were broadcast through extensive arrangements directed from a special control room in Washington. Eight programs were broadcast from the United States, Europe, and the Pacific. President Truman's message to oversea troops was broadcast over a world-wide network to even the most remote bases through connections with the Armed Forces Radio Service.

Postwar radio frequency allocation planning was continued during the year. The Interdepartment Radio Advisory Committee and the Federal Communications Commission in joint meetings arrived at a compromise allocation plan for the radio frequency spectrum above 25 megacycles. A plan for allocation below 25 megacycles was completed and transmitted to the State Department. A working group of the Frequency Allocation Committee of the Combined Communications Board, meeting with other members from London and Canada, discussed allocation problems of combined interest. A preliminary exchange of views did much to harmonize United States and British desires. Joint War Department-Navy Department use of the 225-400 megacycle band was agreed upon on 14 December 1944. The Civil Aeronautics Administration agreed to act as the coordinating agency for the allocation of instrument landing system localizer and glide path frequencies for commercial aircraft and War and Navy Department planes. Radio frequencies were assigned to meet all

Army Command and Administrative as well as Army Airways Communications System requirements.

Army Pictorial Service

The fiscal year 1945 was the most active year to date in Army photographic history. Pictorial accomplishments were the most extensive, motion and still pictures produced reached the largest peak, photographic research and technical improvements made their greatest contribution to military photographic coverage, and operations unique in motion picture history were performed.

Completed motion picture production came to more than a thousand films, compared with 800 in the previous year. The footage of these productions exceeded the footage of the previous year by 30 percent—some 2,100,000 feet compared with 1,600,000 feet.

Several new types of productions were authorized during the year—Technical Film Bulletins of combat conditions prepared for analytical purposes and educational and reconditioning films for personnel rehabilitation. Other types of films produced during the year included Training Films, Film Bulletins, screen magazines, GI movies, orientation films, industrial incentive films, combat reports, and special films for various agencies of the War Department.

Among the year's important productions were the pictures "Diary of a Sergeant," and "Swinging into Step," which were based on the experiences of amputees who learned to live normally again with the use of artificial appliances. These pictures were used for rehabilitation purposes at Army hospitals. To assist military personnel who had been discharged and returned to civilian life, production was started on a new series of films on "Postwar Jobs."

One of the most outstanding pictures of the year was the orientation film "War Comes to America." It told briefly the history of American opposition to tyranny and of the circumstances leading to American entry into the present war. The film "Two Down and One to Go" describing the Army's discharge system was released throughout the world on VE-day and within 5 days was shown to 97 percent of all military personnel in the zone of interior and to 95 percent of all personnel overseas. "On to Tokyo" supplemented this film by answering questions pertaining to redeployment. It received the same widespread release as "Two Down and One To Go."

Immediately after VE-day, four training films were completed for the Commanding General of the European Theater of Operations to demonstrate the packing of small arms tanks, and trucks. These films were to facilitate redeployment of equipment from Europe.

The distribution of general information films was extended during the year to keep pace with the movement of troops. In the fiscal year 1945, there were 118,000 showings, as compared with 44,700 showings in 1944. Distribution during the year expanded to include prisoner of war camps. Reconditioning films were shown in ASF and AAF hospitals, while industrial incentive films were distributed for showing to civilian employees at ASF and AAF installations.

Combat coverage by both motion and still pictures was the most complete of any year of the war. Almost 9 million feet of motion picture footage was received by 30 June 1945; 145,000 still pictures were received compared with 127,000 in the previous year. This

increased coverage reflected both the numerous events to be photographed and the greater number of better trained combat photographers available. The coverage included the break-through in Normandy, the progress of the campaign in northern and southern France and in Italy, the death of Mussolini, the surrender of Germany, and German prison camp atrocities. There was greater coverage also of the landings in the Pacific and of the progress of the Philippine campaign.

To preserve for the future as complete a photographic record of this war as possible, the Army Pictorial Service motion and still picture libraries continued to review, select, and catalog combat photography. By the end of the year these libraries had filed some 210,000 unduplicated still pictures and 9,200,000 feet of motion picture coverage.

There was continued improvement during the year in still picture color photography. The increasing demand for color photography encouraged further experimentation to include developing and printing of color pictures. Color films had to be processed in the United States. Consequently, photographers overseas had no way of knowing how good their pictures were. In October 1944, the Army Pictorial Service began the practice of furnishing color critiques to combat photographers. Improved photography resulted. Motion and still pictures which do not reveal military secrets are released for timely showing to the general public through the War Department Bureau of Public Relations. A large amount of newsworthy material was thus released in 1945. In addition, many of the special productions of the War Department were released for general showing or as industrial incentive films for showing to war workers.

Equipment reports from overseas during the year indicated that projection equipment was inadequate to meet unusual and special conditions of use and climate. Accordingly, a new 16-mm arc projector and new folding motion picture screens were selected for overseas distribution; a means of adapting projection equipment to direct current was also provided. To facilitate combat photography a new quick-changing lens mount and other improvements were made in the 35-mm camera. A waterproof camera carrying bag was developed equipped with a waterproof zipper fastener which permitted unhampered access to the camera for action photography. It was sufficiently buoyant to float both camera and photographer.

The total number of V-mail letters microfilmed and reproduced came to some 600,000,000. This was an increase of 9 percent in volume over that of the previous year.

Continued attention was given throughout the year to conserving film and printing paper and on the consolidation of photographic laboratories. Fewer enlargements of pictures were made during the year and all photographers were instructed to avoid unnecessary wastage of film. The consolidation of photographic laboratories was still being arranged at the end of the year.

Chapter 8. TRAINING SERVICES

The ASF continued in 1945 to have a sizeable responsibility in activating and training troop units for duty overseas. Replacements for the units already dispatched was another phase of training activity. Personnel were also trained for assignment to ground and air forces units.

Altogether, the ASF activated 1,332 units in the United States; 448 of these were medical, 225 Signal, 178 Quartermaster, and 176 Engineer. There were 86 Transportation Corps units, 69 Ordnance, 36 Military Police, 17 Adjutant General, 9 Chemical Warfare, 55 Italian Service Units, and 33 miscellaneous units. Some 860 units were disbanded during the year, and many others were reorganized to accomplish different tasks from those originally contemplated.

The demand for medical units increased proportionately with the number of casualties sustained in combat on the European continent. As operations in the Pacific expanded, there was an expanding need for small medical units such as malaria control and malaria survey detachments. Medical units activated during the year ranged in size from dental detachments of one officer and one enlisted man to general hospitals with a strength of 898 persons. WAC units were activated to serve with general hospitals in the United States.

Oversea commanders increased their demands for such units as petroleum laboratories, drum cleaning and repair platoons, and petroleum distribution companies. These were needed to keep combat units constantly pressing forward. Other quartermaster units in considerable demand included laundries, bakeries, fumigation and bath units, and salvage repair companies. Communications units also were needed in large numbers, from construction battalions and companies to small switchboard operating detachments. The expanding activities of the Air Transport Command called for equipment installation detachments, weather equipment detachments, and equipment maintenance detachments.

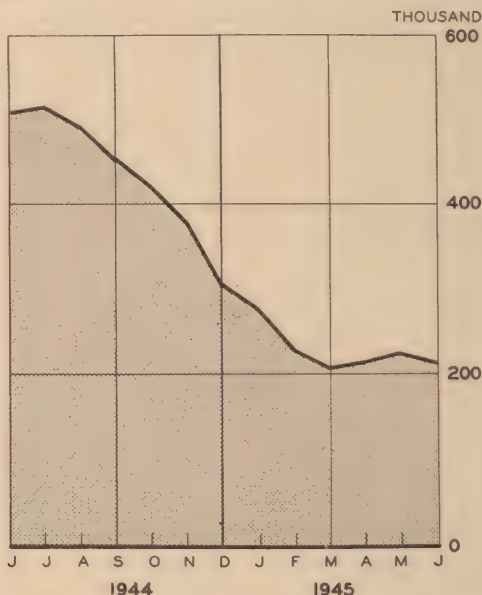
As VE-day approached, the number of prisoners of war in Europe grew daily by the thousands. In order to free combat troops from guarding prisoners, many small military police units were activated to serve as gate and patrol detachments and as prisoner of war guard detachments. Military police escort guard companies were activated to escort prisoners from overseas theaters to the United States, and from ports to prisoner of war camps in the United States.

Few changes were made in the basic doctrine and organization for training ASF units, replacements, and individuals. Reports from overseas indicated that the training received in the past was essentially adequate and sound.

Toward the end of the year, the chief emphasis was placed on the preparation of training programs for use in redeployment training and

for the instruction of newly inducted personnel destined for eventual use in the Pacific. Special attention was given to the maintenance of health and efficiency under the conditions of climate and terrain encountered in the Pacific. The effect of these conditions on equipment was also stressed, so that men would be prepared to keep their arms and their equipment in good operating condition. Service troops trained by the ASF were also familiarized with the enemy's arms and equipment as well as with his tactics and techniques. Since service units might operate at distances from other bodies of troops, they had to be prepared to protect themselves against Japanese infiltration tactics and raids. Soldiers were also instructed to meet the eventuality of gas warfare.

**TOTAL
ASF TRAINEE
STRENGTH
FISCAL YEAR 1945**



A training mission of 21 officers was sent to the European Theater of Operations in April and May to assist in establishing redeployment training policy and plans overseas and to obtain first-hand information on the training status of units to be redeployed to the Pacific. As a result of this visit, a number of changes were made in overseas redeployment training plans and final preparations were made in the United States for handling units to receive redeployment training by the ASF. These programs were put into effect immediately upon the cessation of hostilities in Europe. Only a handful of ASF units had returned to the United States by the end of the fiscal year, and none of these had started their redeployment training.

A major handicap to ASF training during the fiscal year occurred when it was necessary to transfer 25,000 men of high physical qualification to the Army Ground Forces. These men were needed as infantry replacements for the European and Mediterranean Theaters. The transfer inevitably retarded the training of a large number of units which were ready for overseas service. These units were left with men not physically qualified for overseas duty who could not be

replaced because there was no immediate source of personnel upon which to draw. During this same time the quota of men received by the Army Service Forces from inductees was reduced. This aggravated the problem of preparing units for overseas.

On 30 June 1945, there was a shortage of 14,000 trainee personnel at all ASF training centers for both replacement and unit training. The shortage was caused by heavy oversea replacement demands followed by a rapid increase in the number of trainees.

Total training strength of the ASF declined from 504,600 persons on 1 July 1944 to 212,500 at the end of June 1945. This was the number of individuals receiving instruction from the ASF at any one time in replacement training centers, in units, in schools, in the Army Specialized Training Program, and in special training units.

Replacement Training

On 1 July 1944, there were 185,000 enlisted men in ASF training centers. By the end of February, this training load was reduced to 73,000. Accordingly, five training installations were closed and placed on a stand-by status for reentry within 45 to 90 days. The Engineer training centers at Camp Sutton and at Fort Custer were closed 1 December 1944. Camp Grant was closed 15 October, and Camp Sibert and Camp Barkeley were closed 1 April 1945. By the end of the year, there were 13 Army Service Forces Training Centers in operation. Trainee strength had increased to 113,000 by that time.

Because of the decline in the number of training centers and in the types of training, all newly inducted personnel assigned to the Army Service Forces were sent to one of three centers to receive 6 weeks' basic military training. Camp Lee, Fort Leonard Wood, and Fort Lewis were used for this purpose. With a temporary increase in induction quotas for the Army Service Forces, 6 weeks' basic military training was also given at Camp Crowder and at Camp Claiborne. From these centers enlisted men were assigned to other centers for technical training.

During the year, all mobilization training programs were revised. The new basic military training program for newly inducted personnel contained a 3-week's refresher program for those with previous service. The sixth week of basic military training was given under field conditions. All mobilization training programs contained complete directives governing the conduct of training. A new mobilization training program had to be established during the year for men leaving essential industry who were below the minimum physical standards for general military service. Some 6,200 men in this category were being trained at the end of the year at Camp Ellis.

Unit Training

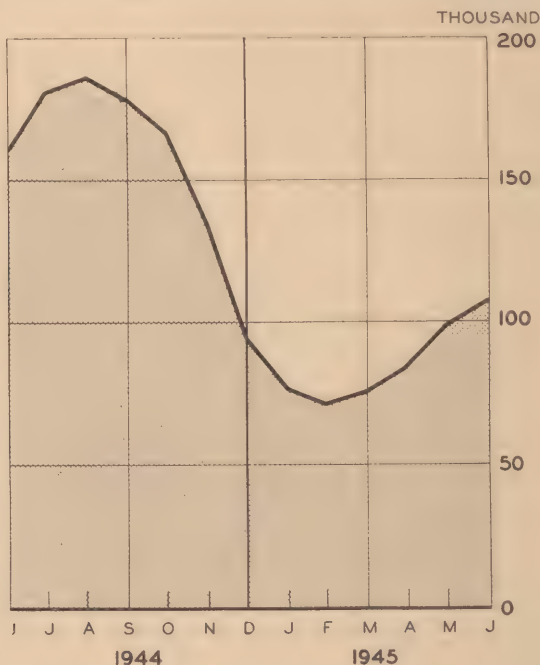
The number of troop units being trained by the ASF declined steadily as new activations decreased and units were sent overseas. In July 1944, there were 1,361 troop units being trained with a total personnel of 213,000 enlisted men. By January 1945, the number had declined to 826, and by June to 278, with an enlisted strength of 42,000. These units covered the wide variety of ASF jobs which had to be performed for oversea commanders in theaters of operations.

Two problems became particularly acute during the year in the

training of units for overseas service. One of these was a scarcity of personnel which did not permit the training of sufficient men to replace the losses from normal training attrition. In the second place, many men assigned for unit training were physically unqualified for overseas service. These men were not promptly removed early in the training period, partly because of the lack of replacements.

The ASF training plan inaugurated in 1944 meant that practically all newly activated units in 1945 had received preactivation training. Since all men completed basic military and basic technical training prior to the activation of a unit, they were better trained in their individual specialties. The noncommissioned officers were better qualified, too, since all were required to complete the leadership course

TRAINEES AT ASF TRAINING CENTERS (EXCLUDING T/O UNITS)



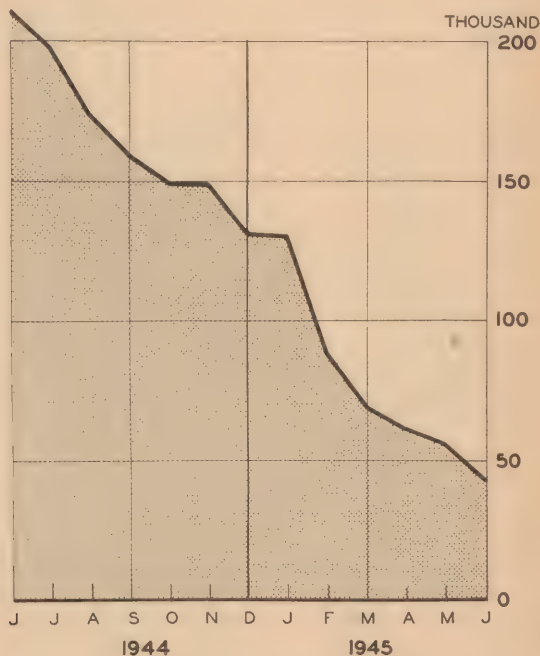
prior to assignment. In addition, all men were present on activation date to begin actual unit training; and they had already become acquainted before actual activation of a unit. Although the plan accomplished its desired results during the year, flexibility in the selection and assignment of men was diminished, primarily because of the scarcity of men in training to meet requirements for new activations and for trained replacements. The plan demonstrated its complete feasibility in meeting the requirements of the troop basis.

With the advent of VE-day, plans were developed for the training of units returned to the United States on their way to the Pacific. Many service units were scheduled to move overseas shortly after their 30-day assignment home was completed. Consequently, it was essential to use the limited time available for training in as effective a way as possible. The ASF decided to base its program upon cor-

recting the actual deficiencies in a unit shown in the status report of the theater returning the unit to the United States. After these deficiencies had been corrected, any additional time for training would be devoted to general training activity. In compliance with War Department policy, a 5½-day training week was established for redeployed units and for units in which the majority of the personnel had had oversea service.

The Inspector General inspected 467 units during 1945 and found 33, or 7 percent, of them not qualified under the requirements of the War Department oversea movement directive. This was a smaller proportion of units declared not ready for oversea service than in the previous fiscal year.

STRENGTH OF ASF T/O UNITS IN TRAINING



School Training

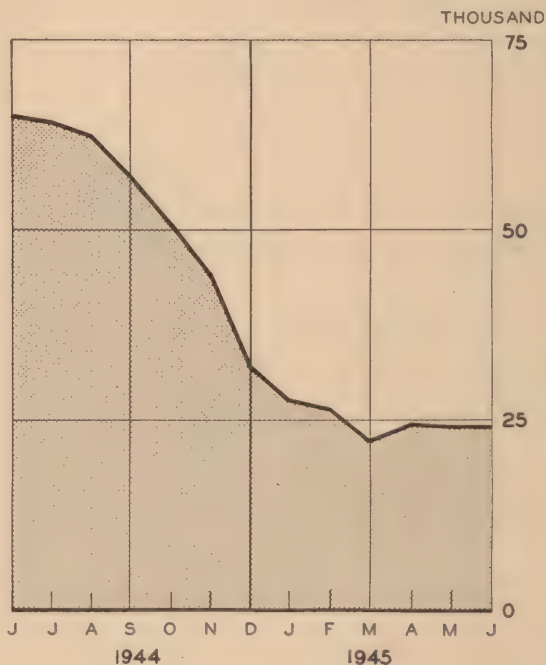
Most school training under the ASF had two broad objectives. The first was to provide additional individual training to enlisted and officer personnel in desired technical fields to supplement the training received in training centers. This training was provided personnel from ASF units as well as from units trained by the Ground and Air Forces. The second objective was to provide a broad type of training to men in basic intellectual and technical fields. This was done primarily through the Army Specialized Training Program.

Both Army and civilian schools were utilized in training individuals. During the fiscal year 1945, a total of 401 courses were given in ASF schools. Of these, 169 were designed for officers, 218 for enlisted men, 12 for officer candidates, and two for civilians. Instruction was distributed at the year's peak among 76 service schools, and 53 civilian schools. Altogether, nearly 300,000 men and women were trained

during the year. These included nearly 40,000 officers, 34,000 officer candidates, 102,500 enlisted men, 5,000 officers and 35,000 enlisted men from Army Ground Forces, 5,600 officers and 9,000 enlisted men for the Air Forces, and 9,000 officers and enlisted men for the War Department General Staff, the U. S. Navy, the Marine Corps, and the Coast Guard. Nearly 10,000 persons were trained in civilian schools and the remainder in service schools of the ASF.

The most serious problem in school training during the year centered in officer candidate schools. Before 1 July 1944, frequent changes had been made in the quotas of these schools. In the 2 months of July and August 1944, quotas were increased to nearly 73 percent of

TRAINEES IN ASF SERVICE AND CIVILIAN SCHOOLS



capacity from a previous low of 20 percent. It proved very difficult, however, to obtain the candidates to meet these quotas. Officers in charge of training units were reluctant to release their best personnel to attend officer candidate schools. Secondly the quality of personnel available for selection was not as high as in the early years of training.

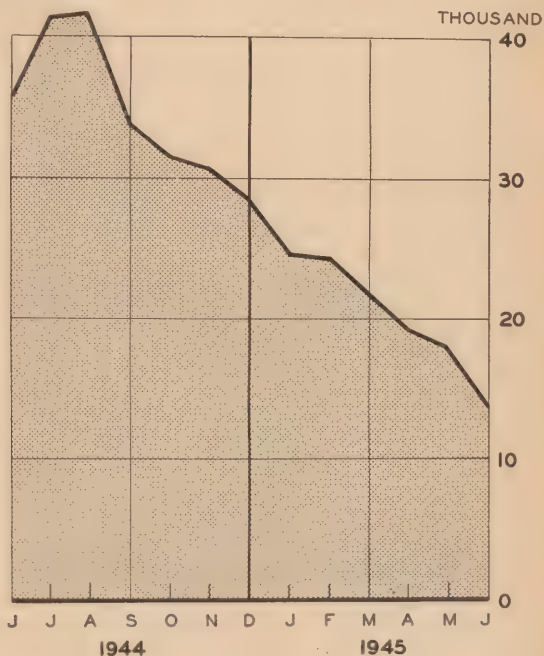
All school instruction of enlisted men was revised after V-E day to place particular emphasis on operations against Japan and to delete materials specific to operations in Europe. This involved the re-writing of 130 programs of instruction.

Army Specialized Training Program

During 1945, training under the Army Specialized Training Program was given in 16 curricula. Of these, 11 were designed primarily for advanced enlisted trainees, four for reserve students, and one for U. S. Military Academy preparatory program students. Instruction in

these curricula was distributed among 140 colleges and universities, the majority of which were advanced ROTC institutions before the war. Of these, seven were essentially military colleges. A total of 33 ASTP units were inactivated during the year and no new ones were created. In the 140 units functioning during all or part of the fiscal year, 56,500 individuals received training; 22,650 were graduated and 20,900 were separated for various reasons. There were 33,800 enlisted men in the advanced program; 21,600 reserve students; and 1,150 officers, warrant officers, and enlisted men who held appointments as principals or alternates to the U. S. Military Academy receiving preparatory instruction.

ENROLLED STRENGTH OF THE ARMY SPECIALIZED TRAINING PROGRAM



Recruitment for the reserve program was discontinued on 31 December 1944, but new classes were to begin in July 1945. Training in the Military Academy preparatory program was conducted at three schools. An intensive training course in infantry weapons at Fort Benning was substituted for the second phase of the program. In the Army Specialized Training advanced program, the majority of students were assigned to medical, dental, and veterinary curricula. In July, there were 14,000 trainees enrolled in medicine, nearly 6,000 in dentistry, and some 400 in veterinary medicine. Some 1,100 new trainees were assigned to the study of medicine but none to the study of veterinary medicine or dentistry in the remainder of the year. Nearly 5,000 medical trainees were separated from the program when it was curtailed. By the end of the year there were some 8,000 enrolled in medicine and none in dentistry or veterinary medicine. Engineering training was continued in six curricula—general, civil, electrical, mechanical, and sanitary engineering and advanced study.

In July there were 2,600 trainees enrolled in these curricula. By the end of the fiscal year, some 4,000 had graduated and the others were withdrawn for various reasons. Language training continued under three curricula in 14 foreign languages, with some 1,200 graduates during the year. This program had 535 in training on 30 June 1945.

Under the Army Specialized Training Reserve Program, three curricula were provided 17-year-old men enlisting either in the Enlisted Reserve Corps or the Air Corps Enlisted Reserve. In July 1944, there were 13,600 students enrolled under this program. The number was reduced to approximately 2,600 by the end of the fiscal year. The program was planned to expand to over 10,000 early in the fiscal year 1946. The "N" curriculum in this program provided general intellectual development for reserve students. There were some 5,600 persons receiving this instruction before the curriculum was discontinued. A second curriculum provided basic training to prepare students for possible selection in the more advanced and specialized training of the program. More than 12,800 students received such training during the year, of whom 5,600 graduated and 4,800 failed. The third curriculum provided extensive training in the Japanese language and the Far East. Graduates of this curriculum were designated to study Japanese in the Army Specialized Training advanced program after they had received their basic military training. Some 200 students received such training during the year, of whom 160 graduated.

Specialized Training Units.

Special training units were continued at reception centers to provide literacy and elementary basic training for the newly inducted marginal soldiers. The training program devoted 60 percent to military training. This was modified to meet the needs of non-English-speaking persons and those in grade V of the Army general classification test. Ordinarily, a man was retained in a special training unit for 12 weeks of instruction before a decision was reached on forwarding him for regular training or discharging him from the Army.

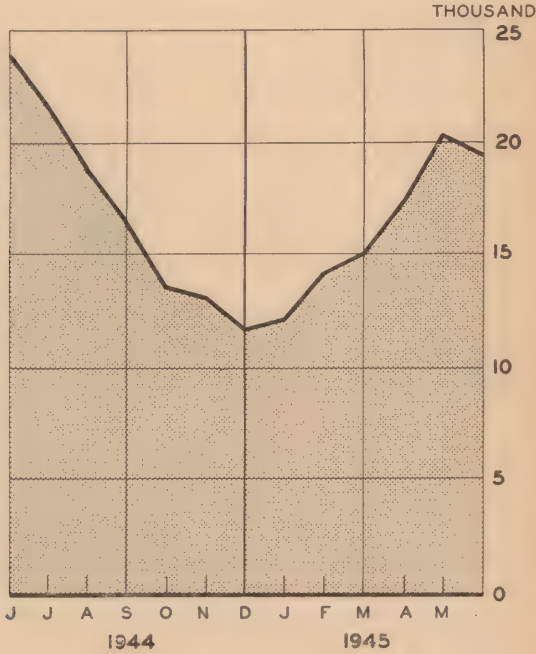
In practice, men were forwarded for basic training as soon as they gave evidence of being able to read and do arithmetic at the fourth grade level and showed by their accomplishments in military training that they were capable of becoming soldiers. Conversely, men were discharged from the units and returned to civilian life as soon as it became apparent that they were incapable of obtaining the standards of efficiency required in the Army. During the fiscal year 1945, some 105,000 trainees, or 11.5 percent of those coming to reception centers, were sent to special training units. The comparable figure for the fiscal year 1944 was more than 155,000. Of the trainees, 80 percent were classified as illiterate or non-English-speaking and 20 percent as grade V. Nearly 70 percent of the average enrollment at any one time were white trainees. Of the men processed at reception centers, about 9 percent of all whites and 49 percent of all negroes were sent to special training units. The number of special training units was reduced from 18 to 14 during the year through consolidation. This brought about a considerable saving of manpower by reducing overhead personnel.

About 85 percent of all men assigned to special training units qualified for regular basic training during the year. Of the men thus

salvaged for military duty, 44 percent required less than 30 days' training and 79 percent required less than 60 days' training. This was an improvement over the record in the previous fiscal year. Wherever possible, civilians replaced military personnel as academic instructors and as clerical assistants in special training units. Almost all literacy instruction was handled by civilian teachers.

At the conclusion of their second year of operation, special training units had demonstrated the practicability of special training for men of limited educational, mental, and language abilities. Since June 1943, a total of more than 220,000 men have been forwarded from these units to regular basic military training. About 85 percent of the white

TRAINEES IN
SPECIAL
TRAINING
UNITS



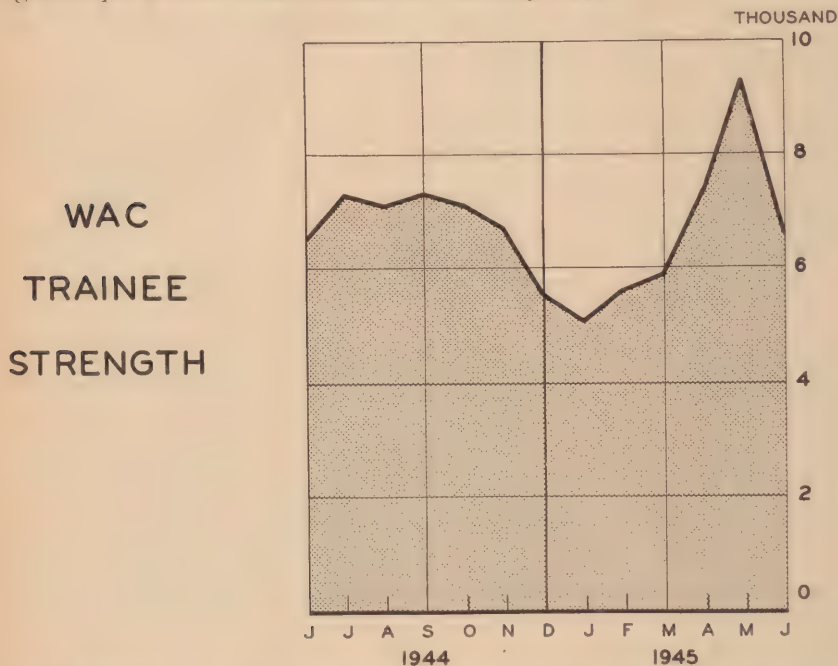
trainees and 86 percent of the negroes successfully completed special training. Because of his preparatory work in these units, the marginal soldier did not impede the progress of basic training conducted at regular training centers upon his arrival there.

Wac Training

During 1945, some 37,800 newly enlisted women received basic training in WAC training centers. In addition, 7,081 enlisted women were trained as medical technicians and 5,657 received basic technical training in other courses. The WAC officer candidate school was moved from Fort Oglethorpe to Fort Des Moines during January 1945. During the year, 291 officer candidates were commissioned after successful completion of the course. Basic training was given at both Fort Oglethorpe and Fort Des Moines, but at the end of the year plans were completed for consolidating all WAC training at Fort Des Moines by the end of July 1945.

At the request of their respective governments, women were trained at WAC training centers for the Polish and the Netherlands East Indies Army Corps. Six Polish and 54 Dutch enlisted women were trained. Fifty-nine women were recruited and trained for the WAC in Hawaii and 196 Porto Rican women were also trained in this country. One Dutch woman was trained and commissioned as an officer in the Dutch Army.

The WAC oversea replacement depot processed 421 officers and 6,449 enlisted women for oversea shipment. The two weeks' course at this depot covered training activities normally prescribed for male personnel proceeding overseas. The depot was moved from Fort Oglethorpe to Fort Des Moines in February 1945.



An average of 2,321 enlisted women were trained every month in Army Service Forces schools. Enlisted technician schools of the Medical Department trained a large percentage of the total. Other school training for enlisted women included courses in cryptography, signal communications, supply, administration, finance, small arms repair, personal affairs, educational reconditioning, and information and education.

In April 1945, the school for WAC personnel administration was established at Purdue University. The mission of this school was to give additional training in leadership of women by making available to WAC officers information about the best administrative and personnel practices developed in the Army during the past 2 years. The courses also provided materials and methods to assist officers in the performance of personnel work in WAC detachments. Officers detailed to the school were those currently assigned to duties involving the administration of WAC personnel.

A program of current training was conducted during the year for the nearly 43,000 WAC enlisted women assigned to ASF installations in the United States. This program was uniform with that prepared for the Army Air Forces and the Army Ground Forces. It included physical training, drill, Army orientation, and a review of essential basic military subjects.

Preinduction Training

The program of providing information about the needs of the Army to potential inductees through secondary schools and others means was continued in 1945. Reports from theaters of operation pointed to the need for greater emphasis on military map reading in all military training. In the summer of 1944, the Director of Military Training, in cooperation with the U. S. Office of Education, prepared and distributed to secondary schools a bulletin on "Fundamentals of Military Map Reading."

To aid in the instruction of possible inductees, the ASF also prepared a film presenting the experiences of a typical inductee from the time he received his notification of induction until he completed his basic training. This film was shown to school groups and other interested persons in every state.

Because of the tremendous increase in the proportion of inductees assigned to the infantry, a special study was made of the preinduction needs of that branch of service. These needs were defined by the Commanding General of the Army Ground Forces in an article which appeared in the February 1945, issue of the *Journal of the National Education Association*.

A War Department bulletin, "Essential Facts about Preinduction Training," was prepared in cooperation with the U. S. Office of Education and distributed to school officials in the summer of 1944.

Preinduction training requirements were widely publicized through radio, newspapers, and magazines during the year. Press releases were issued with each new development in the program. Military training officials appeared from time to time on the programs of national radio hook-ups. Articles on preinduction training were published in more than 100 education reviews. Training officers also addressed state, regional, and national meetings of teachers and school administrators. Arrangements were made for more than 2,000 educational administrators to visit army posts, camps, and stations during the year.

In cooperation with the Army Air Forces, educational programs were arranged and conducted by which civilian educators were made familiar with the instructional procedures and equipment used by the Air Forces. Demonstrations were held in selected cities with interested educators from the surrounding territory attending. Copies of the "Soldier's Handbook" were delivered to schools in the spring of 1945, in sufficient quantities to permit distribution of 1 copy to all youths 16 and 17 years of age. The weekly Army Newsmag was distributed to selected schools. Army films and film strips were made available to secondary schools offering preinduction training, and obsolete Army property was also donated. In 1 month, the Army Air Forces alone gave more than 11 million dollars worth of property to schools.

Training Literature and Training Aids.

Many new Technical Manuals on the use of equipment were prepared during the fiscal year in accordance with a standard outline and format. These manuals proved to be highly effective training texts and materially assisted all using organizations in the proper operation, maintenance, and repair of equipment. The standard outline reduced the amount of time and labor previously required in the preparation of such manuals and also eliminated much superfluous detail. The radar literature training program, developed to meet the requirements of the Ground Forces, the Air Forces, and the Navy Department in addition to those of the Service Forces, was substantially completed during the year and proved most effective in use. Altogether, 1,173 manuals were published, of which 83 were revisions. Of the total, 968 were designed to accompany new equipment, 97 covered new technical subjects, 63 were tactical and 45 were administrative or other special types of manuals.

Although the production of Training Films, Film Strips, and Graphic Training Aids was somewhat smaller in the fiscal year 1945, approximately 80 Training Films and 135 Film Strips were added to the list available for use in ASF training. Another 30 Training Films and 50 Film Strips were declared obsolete as a result of the development of new weapons and equipment.

Among the most important additions to the Training Films was a new series on basic map reading, films on the technical principles of radar and radar antijamming, films on the new floating bridge M-4, and films prepared especially for use in redeployment training. A Sound Film Strip on the phonetic alphabet proved of special interest. Tests indicated that this visual method of presenting material, requiring audience participation, helped to increase the rapidity of learning.

Film Bulletins covered new items of equipment, new weapons, and recent developments in procedures and techniques. In many of these Film Bulletins combat photography was used to good advantage. Of particular interest were Film Bulletins on "Medical Service in the Jungle," "Camouflage in Combat," "The Light Tank," "Trench Foot," "The 4.2-inch Chemical Mortar," and "Japanese Land Mines." In addition, Combat Bulletins issued during the year made it possible to release information about new weapons and new items of equipment in an expeditious manner to troops throughout the world.

Thirty-six Graphic Training Aids were distributed for use in training ASF personnel during the year. Of particular interest were graphic materials on enemy mines and a series designed specifically to meet the needs of redeployment training. In addition, another 150 Graphic Training Aids were prepared by chiefs of technical services to meet specific training requirements.

In order to improve the effectiveness of the use of films, Instructor's Film References were prepared for each new Training Film released and for a number of Film Bulletins. These references contained information summarizing the subject matter of the film, its use and place in the program, a list of correlated materials, suggested introductory and follow-up exercises, and other useful data for the instruc-

tor. The list of War Department films and Film Strips was published on a quarterly basis with monthly supplements in ASF circulars. Training personnel were thus promptly notified of the availability of any film materials. Training personnel were also notified, when production was begun on graphic materials, of the probable time of availability.

Medical Training

At the beginning of the fiscal year The Surgeon General supervised three basic training centers that were taxed to capacity. In addition, there were nine schools for medical technicians, and two schools for candidates for commission as Medical Administrative Corps officers with a capacity of 1,250 candidates per month. For the training of the professional commissioned personnel, professional courses were given at four civilian institutions in addition to training at general hospitals.

Troop requirements necessitated further expansion of facilities for basic medical training of Medical Corps men to a capacity of 70,000 trainees. To realize this expansion, Camp Grant was closed and the personnel and equipment were transferred to Fort Lewis which had a greater capacity. The capacity of Fort Lewis, together with that of Camp Barkeley and Camp Ellis, was sufficient to meet the needs.

At the beginning of the year most of the training activities were centered on unit training. By December 1944, the requirements for unit training had been greatly reduced, and by March it was practically completed. As the over-all training requirements decreased to a constant number of 10,000, there was a material reduction in the training camps, with the closing of Camp Ellis in February and of Camp Barkeley in March. Some of the Camp Barkeley units were transferred to form the Medical section of the Army Service Forces Training Center at Camp Crowder, activated in March. Later, to meet the training requirement for redeployment following the defeat of Germany, Camp Sibert was transferred on 6 June 1945 to the Medical Department as a Training Center. The facilities of that camp with a capacity of 18,000, in addition to those available for medical training at Fort Lewis and Camp Crowder, were adequate to meet training needs during the coming year.

In 1945, the Medical Department Enlisted Technicians School trained over 26,000 male technicians. This training reached its peak in the first half of the year. At that time the demand for general service men as combat troops necessitated a material decrease in the male enlisted men available for such training. Consequently, four of the schools were discontinued and three others were converted into training for both male and female enlisted personnel. The conversion greatly facilitated the training of the enlisted women with the result that 4,900 were trained as technicians of the Medical Department during the year. In addition to the enlisted technicians schools, a 10 weeks' course of special instructions was conducted at Fort Oglethorpe, Georgia, where approximately 5,000 medical and surgical technicians were trained.

The capacity of the Officer Candidate School for Medical Administrative Corps Officers, which had been greatly decreased during the

preceding fiscal year, was increased to meet the new demands for such officers. The OCS at Camp Barkeley was expanded in July 1944 to provide for a monthly quota of 1,000 candidates, and the OCS at the Medical Field Service School, Carlisle Barracks, was expanded to a monthly capacity of 250 students. The school at Camp Barkeley was discontinued on 14 March, 1945, following the graduation of its fortieth class. During the almost 3 years of the operation of this school, it graduated 12,406 officers. The classes in the Medical Field Service Officer Candidate School were reduced during the latter part of the year. The two schools during the fiscal year graduated 3,569 officers.

Quartermaster Training

The Quartermaster School in 1945 trained 4,600 officers and 2,900 enlisted men. Schools for bakers and cooks in the various service commands trained 31,362 enlisted men and 2,000 officers.

Replacement training for the Quartermaster Corps was conducted again in 1945, at Camp Lee and Fort Francis E. Warren. Unit training went on at numerous posts throughout the United States. Courses at the Quartermaster School during the year included the basic and advance supply courses for officers, the ASF depot course, the advanced administration and supply course for noncommissioned officers, a fuels and lubricants course, and an officer candidate course. The depot course was revised during the year to cover all phases of depot operations in the zone of interior. A new course in fuels and lubricants was established to train selected officers in all phases of handling fuels and lubricants. The course consisted of 2 weeks of training at Camp Lee and 4 weeks at the Naval Supply Operations Training Center in Bayonne, New Jersey. Some 30 officers completed this course. An advanced course for storage officers was reestablished at the Ogden depot to train Quartermaster officers returning from overseas and to provide advance training for storage officers in the United States. A new course was established at the Columbus depot for training officers and enlisted men in packing and packaging. Eighty-five officers and 20 enlisted men completed this course during the year.

Because of the loss of key civilian personnel, it was necessary to reestablish the Quartermaster Subsistence School in Chicago. Four classes of 13 weeks each, with a capacity of 20 officers in each class, were conducted. Courses at the schools for bakers and cooks were revised to place emphasis upon redeployment problems and the peculiar needs of the Pacific. Only a few courses were offered at civilian institutions during the year where no military facilities for training were available. The University of Tulsa continued its course for officers and enlisted men to be assigned to Quartermaster petroleum laboratories. The Petroleum Iron Works in Sharon, Pennsylvania, made its facilities available at no cost to the government for training supervisors and technicians to be assigned overseas to can- and drum-manufacturing plants.

Nineteen war-dog platoons and one war-dog company were trained during the year. Thirteen of these platoons and the company were sent overseas by 30 June. The responsibility for procurement of dogs and the training of individual war dogs and handlers remained with The Quartermaster General. The activation and training of war-dog units was transferred to the Army Ground Forces. Future

use of war dogs was expected to be confined to infantry scout dog platoons to be used in the Pacific. No further training was contemplated for guard and sentry duty. Altogether, 1,300 war dogs and 688 handlers were trained during the year.

After the publication of new mortuary procedures, a course of instruction was given to directors of mortuary operations in service commands and some 30 training conferences were scheduled for personnel at military posts in the United States responsible for handling burial arrangements.

By January 1945, an increasing amount of misfit clothing was being supplied to military personnel. The Quartermaster General trained teams to conduct conferences in service commands, at ports of embarkation, and at Army Air Forces installations on the proper fitting of clothing. Thirty-two of these conferences had been held by the end of the year. Conferences were also held to train personnel in the proper cold-weather care of clothing and equipment. The persons so trained were expected to impart this information to individual military units.

None of the 612 units trained by The Quartermaster General were turned down by the Inspector General's Department during the fiscal year because of improper preparation for field duty.

A program of publications on the use of materials handling equipment was begun during the year. Training Films and Film Strips were also prepared and widely used. A series of publications on laundry operations were distributed to the field. A new manual on grave registration courses was published.

The basic manual on cooking and messing operations was in final stages of revision.

The Quartermaster Training Service Journal increased its circulation to 40,000 in 1945. This distribution covered Quartermaster units and installations overseas as well as within the United States. As the official organ of the Quartermaster Corps, it disseminated timely training information about items of equipment as well as new procedures.

Ordnance Training

The ordnance training program in 1945 introduced several new types of ordnance units. One of these, for example, was an ordnance floating maintenance barge unit designed and equipped to perform repair work at isolated island stations on all mechanical and electrical equipment used in the Army. Although the unit was called an ordnance unit, attached to it were maintenance detachments from the Corps of Engineers, Signal Corps, Transportation Corps, and Medical Department. Another new type of unit was the ordnance-recoil repair company designed to maintain artillery recoil mechanisms in the Pacific. It was able to overhaul completely a minimum of 500 recoil mechanisms per month. Before the establishment of this type of shop, all recoil rebuilding for the Pacific had to be done at the Rock Island Arsenal in the United States.

The Ordnance Department supervised the training of some 58,000 men in its schools and replacement training centers. Of the total, 4,700 were officers, 2,112 were officer candidates, and 51,300 were enlisted men. Training strength reached a peak of 8,800 in July 1944,

and a low of 2,280 in June 1945. Unit training centers trained a total of 15,500 enlisted men. There was a definite trend toward instructional programs to provide desired individuals trained in specific skills to meet specific requirements established by overseas theaters.

Engineer Training

Engineer replacement training was conducted during the year at Fort Belvoir, Fort Leonard Wood, Fort Lewis, and Camp Claiborne. Unit training was conducted at these same posts with the additional use of the Columbus ASF Depot and the Granite City Engineer Depot for the training of depot units. Until December 1944, some unit training was performed in Camp Sutton and until January, at Camp Ellis. A few units continued to be trained at Camp Gordon Johnston. Six service schools and three civilian schools were used to train engineer officers and enlisted men.

The subject matter of the courses at replacement training centers was made sufficiently comprehensive in October 1944 to meet the requirements for all engineer specialists for units. Thus, the carpenters' course was broadened to train bridge carpenters, construction carpenters, ship carpenters, and packing-case makers. This grouping reduced the number of courses by about four-fold and made the soldiers more universally useful.

The principal service school continued to be the Engineer School at Fort Belvoir. A maintenance and supply school was run at the Granite City Depot, an instrument repair school at the Columbus ASF Depot, a fire-fighting school at Fort Lewis, a diving school at Fort Screven, and a topographical equipment school at Chicago. All civilian school facilities were discontinued during the year. Two developments made this action possible. The first was a decreasing number of specialists required as replacements and the second was the increased number of specialist courses established at replacement training centers. An engineer construction course was established in November 1944 at Fort Belvoir to provide intensive training for junior officers in construction methods and the use of engineer equipment. In February 1945 the course was lengthened from 4 to 6 weeks. In the same month, the field officers course was lengthened from 6 to 8 weeks to provide further training in practical military engineering and the use of mechanical equipment.

Readiness tests were devised for engineer units during the year to provide a means for testing whether units and personnel within units were prepared to perform their mission overseas. Each test contained an operational problem for the unit, checklists for the inspector conducting the test, and job problems for each specialist within a unit. This type of testing prior to inspection of a unit before it went overseas proved helpful in insuring that training deficiencies were corrected before training was completed.

The Engineer School at Fort Belvoir graduated a total of 3,500 officers during 1945; the Granite City Engineer Depot graduated more than 1,500; and the Fort Screven diving course, 17. Some 4,000 officers were graduated from the Officer Candidate School, at Fort Belvoir. About 10,000 enlisted men graduated from schools in 1945.

Signal Corps Training

The Chief Signal Officer supervised the training of 8,960 officers, 3,576 officer candidates, and 41,000 enlisted men during 1945. A total of 2,005 officers, 37 warrant officers, and 33,000 enlisted men were shipped overseas. The Signal Corps Training Center at Camp Kohler and the school at Camp Murphy, Florida, were closed in the second quarter of the year. The urgency of the military situation overseas prompted requests for shipment of units in increments. In general, the European Theater requested completion of team training, while the Southwest Pacific Area asked for shipment on completion of specialist training.

A number of unusual and rush demands from theaters for Signal Corps personnel were met during the year. In September 1944, the European Theater asked for a WAC signal service battalion to operate signal centers in Paris and at base section headquarters. It was decided to activate a signal service battalion in the theater for this purpose, using WAC officer and enlisted personnel already sent over as a nucleus, with additional strength supplied from the United States. Two hundred and five enlisted women were trained as fillers in three specialties: switchboard operators, teletypewriter operators, and cryptographic technicians. The Adjutant General supplied 60 other enlisted women to bring the total enlisted strength to 265. Sixteen WAC officers were also shipped in January and February.

During the first 6 months of the year, a total of 17 foreign language teams were shipped overseas after training at Camp Crowder. These units were prepared to handle communications between the U. S. Army and armies of Allied Nations. Six teams spoke Chinese; 4, Italian; 3 Russian; 2, French, and one each, Dutch and Norwegian. A large requisition from the ETO for radio link personnel was satisfied in May 1945 by the shipment of part of a signal service company from the United States. Sixteen officers and 130 enlisted men were immediately provided. The huge amount of signal equipment destined to be transported from the Atlantic to the Pacific during redeployment made it necessary to train officers and enlisted men with a knowledge of packaging and moisture- and fungus-proofing. Twenty-one officers were sent to Europe in May followed by two officers and 10 enlisted men in June. Eighteen packaging units totaling 18 officers and 36 enlisted men were awaiting transportation in June, while six other units were awaiting orders to proceed to Italy. The Signal Corps also trained personnel for the Signal Corps portion of a floating spare parts depot to be used in amphibious operations in the Pacific.

The voice code method of instruction in training radio operators was introduced at Fort Monmouth during the year. This method permitted a more efficient selection of personnel with aptitude to pursue radio operator training as well as an increased learning rate in the early stages of training. The trade school method of instruction for both officers and enlisted men was extended. Under this system lectures were reduced to a minimum, with most instructional time devoted to demonstration and actual performance.

The Signal Corps photographic school graduated 198 officers and 818 enlisted men. During the year the chief emphasis was placed on training replacements, special units, and special foreign groups rather than on training large companies.

Chemical Warfare Service Training

Chemical Warfare Service schools were located at Edgewood Arsenal and Rocky Mountain Arsenal, where 18 courses of instruction were offered. In addition to these, there was a course in micrometeorology at Dugway Proving Ground and a depot course at Camp Sibert and the Gulf CWS Depot. Among the new courses offered for the first time in 1945 were classes on flame throwers for officers and enlisted men. Chemical Warfare Service also provided special lectures, conferences, and demonstrations on chemical warfare doctrine and equipment to officers and men throughout the Army. The development of new munitions made it necessary to send technical specialists to train men overseas in the use of the improved matériel. In 1945 teams were sent overseas to give instruction on the recoilless chemical mortar, the mechanized armament flame throwers, and other recently developed items.

A total of 5,900 students graduated from the service schools at Edgewood Arsenal and Rocky Mountain Arsenal during 1945. These included personnel from the Navy, Coast Guard, and Marine Corps as well as from the Army. The training of replacements was sharply curtailed during the year from 550 received during the first 4 weeks of the year to 32 trainees received in the last 4 weeks. Of 16 chemical warfare units in training during the year, all but one had been sent overseas by April 1945. The remainder was scheduled to depart shortly.

During the year, the Chemical Warfare Service issued 82 texts, six Training Films and Film Strips, seven Film Bulletins, and seven Training Aids. A Training Circular was issued on the tactical employment of chemical mortar battalions, and instructions on the various new portable and mechanized flame throwers were published. Greater use of instructional material was required by the provision that each company throughout the Army would have a unit gas officer.

Transportation Corps Training

Training of Transportation Corps personnel and units declined markedly during the year 1945. Replacement training for port and marine units was continued at Camp Plauche and at Camp Gordon Johnston. Rail replacement training was transferred at the beginning of the year from Camp Claiborne to Fort Francis E. Warren. A small amount of training was continued at Indiantown Gap Military Reservation. A total of 12,300 replacements were trained, of which 8,000 were port replacements, 2,500 railway replacements, and 1,800 marine replacements.

Officer training continued at the Transportation Corps school in New Orleans, with most emphasis upon three 8-week courses—stevedore operations, water port operations, and traffic control. Courses in traffic regulation (rail) and traffic regulation (inland waterways and coastwise) were reinstated for one class in March 1945. A new course for ship transportation officers was started in June 1945 to meet the heavy demand for special officer personnel aboard transports. The officer candidate school reached a peak of 1,133 in August, and declined to 100 a month in the last half of the fiscal year.

The technical training of officers and enlisted men at civilian institutions was discontinued after February 1945. The courses offered

included one on Diesel engines at the Buda Diesel Engine School, Harvey, Illinois, and the Whitcomb Diesel Locomotive School at Rochelle, Illinois; a course at the Duval County Vocational School, Jacksonville, Florida, to train men in pipe fitting and steam fitting; a course at Newport News High School in shipbuilding; and a course in ship maintenance and repair given by the New York City schools. The officers' training school conducted at Fort Slocum was discontinued in October 1944, since the military training of officers recruited from civilian life was completed.

The creation of 86 new Transportation units in the United States during the year brought the total number of Transportation Corps units activated during this war to 924. One new type was added during the year—a floating spare parts depot. By 30 June 1945, 882 units had been assigned overseas. A number of these had returned to the United States by 30 June 1945. No new units were to be activated for the war in the Pacific. Marine and port units were trained at Camp Plauche and Camp Gordon Johnston, railway units were trained at Fort Francis E. Warren, base depot companies were training at the Marietta and Voorheesville Holding and Reconsignment Points.

Training under the Director of Personnel

The Director of Personnel, ASF, supervised two service schools, the School of Special and Morale Services at Washington and Lee University, and the Radio Program and Broadcasting School at Los Angeles. A total of 4,710 officers and 4,712 enlisted men were trained at these schools during the year. Seven courses for officers were offered in athletics and recreation, information and education, radio programs and broadcasting, personal affairs, educational reconditioning, physical reconditioning, and civilian personnel administration. Four of these courses were also offered enlisted men.

Training under the Fiscal Director

The Fiscal Director conducted training at the Army Finance School at Fort Benjamin Harrison. A total of 2,579 officers, 503 officer candidates, and 3,475 enlisted men were trained during the year. Courses were offered to officers in termination accounting and auditing, civilian pay roll administration, disbursing, and certain advance fiscal subjects. Enlisted men were also instructed in the first three subjects.

Training under The Adjutant General

At the beginning of the fiscal year The Adjutant General supervised three schools: at Fort Washington, at Camp Lee, and the Army Music School at Fort Myer. The Adjutant General School was moved to Fort Sam Houston on 26 August 1944, in accordance with the policy of abandoning small training installations and consolidating activities at larger posts. Later, the school was moved to Camp Lee when the facilities at Fort Houston were needed for a convalescent center. The Army Music School was discontinued on 18 July 1944. The postal school at Camp Lee was suspended on 11 January 1945, but was resumed in June. The band training unit at Camp Lee continued throughout the year to train individual musicians. The courses offered at The Adjutant General School included work in

administration, psychology, classification, machine records operations, separation classification, and WAC recruiting.

With the establishment of separation centers, The Adjutant General began to train officers and enlisted men in the methods and procedures to be used in separation classification and counseling at these centers and at general and regional hospitals. The first class was begun at Fort Dix in July 1944. In January 1945, this work became a part of the regular course of instruction at The Adjutant General's School. On-the-job training was also developed for the personnel actually administering separation centers as they were created. This training was designed to supply cadres for additional separation centers as they were established. The course was exceedingly practical and consisted of having trainees work as under-studies in the actual operation of separation centers.

A course in clinical psychologists was designed to insure an adequate supply of trained personnel for assignment to the neuropsychiatric sections of general, station, regional, and convalescent hospitals as well as disciplinary barracks and rehabilitation centers. The course was divided between training at the school and practical work in the neuropsychiatric section and the reconditioning center of Brooks General Hospital. When the Adjutant General School moved to Camp Lee, the practical part of the course was conducted at Mason General Hospital. A course on reception station and separation center administration included comprehensive study of the procedures incident to the processing of individuals through reception stations and separation centers and in the handling of all necessary papers for the transfer and release of military personnel. Altogether, a total of 2,493 officers and 3,626 enlisted men received part or all of their training at schools supervised by The Adjutant General.

The Judge Advocate General's School

The Judge Advocate General's School at the University of Michigan trained a total of 686 officers and 589 officer candidates during the year. Officers detailed to the department from other branches of services completed an intensive 8 weeks' course at the school before being assigned to judge advocate duties in the field. The course on contract termination, begun in the previous fiscal year to train officers of all branches in contract termination duties, was suspended in March 1945. Officer candidates were selected from among enlisted personnel in the Army who had graduated from accredited law schools.

Training Under the Provost Marshal General

The Provost Marshal General supervised training at three service schools and seven civilian schools. One service school, the Security Intelligence School, was inactivated during the year. A total of 4,003 officers, 1,057 officer candidates, and 3,119 enlisted men received part or all of their training during the year. Seven officer courses and two courses for enlisted men were conducted. Men were trained as investigators, in traffic handling, in prisoner of war administration, and in security intelligence. In addition, 21 military escort guard companies and five professional military police battalions were trained during the year. Other units included one criminal investigation platoon and three military police companies.

School of Military Government

During 1945, military government training was directed primarily at providing Army officers for civil affairs duty in the Far East. Naval officers were also trained under Army supervision. Before this time, training activities had been devoted primarily to providing civil affairs officers for use in the Mediterranean and European Theaters of Operations.

The School of Military Government directed by the Provost Marshal General began six successive indoctrination courses, of 6 weeks' duration, each on 12 June 1944, giving instruction on the basic principles and practices of civil affairs and military government in occupied areas. Upon completion of this course at the University of Virginia, officers were reassigned to one of six civil affairs training schools established at civilian universities (Chicago, Harvard, Michigan, Northwestern, Stanford, and Yale) to pursue a 6 months' course consisting of Japanese language and area training and the application of military government principles to specific area situations. Prior training of civilians to be employed as Japanese language instructors was given at the University of Chicago.

Experience in Europe indicated the need for special training of public safety officers, preferably of individuals who had civilian and military police backgrounds. Four successive classes of 30 days' duration for 150 public safety officers were begun on 14 August 1944. This instruction preceded attendance at the School of Military Government and the civil affairs training schools.

On 21 September 1944, the Provost Marshal General was directed to select 350 Army student officers for attendance at the Naval School of Military Government at Princeton University. Upon completion of a 3 months' course, these officers were assigned under Army control in the Pacific.

The last class of the first phase of the Far Eastern training program began on 19 February 1945 and is scheduled for completion by 6 October. The six classes included a total of 1,350 Army officers and 220 Navy officers.

By the spring of 1945, it became apparent that a substantially larger number of officers would be required for civil affairs activities in the Far East. Consequently, in April, the Provost Marshal General was directed to procure and train an additional 1,000 Army officers in 5 bimonthly increments. Training under this program began at the School of Military Government on 21 May and was scheduled to be completed by the end of September 1946. The course at the School of Military Government was extended from 6 to 8 weeks in order to give additional instruction in staff procedure, supply, and other basic subjects. Five of the civil affairs training schools will continue throughout this program, with the school at the University of Chicago closing in August 1945.

Officers with outstanding personal attributes, good education, language aptitude, and extensive military experience from second lieutenant to lieutenant colonel under 52 years of age, were selected for this training. Commensurate with age and grade, officers were selected who had successful experience in civil or military life in responsible administrative or professional positions. Experience in

such fields as public works, public safety, fiscal, administration, economics, public welfare, education, communications, law, transportation, public health and supply were desired.

The School of Military Government offered courses in Army organization and operations, Army and civilian supply, the legal aspects of military government, public administration, and intelligence surveys of Japan. The curriculum at the civil affairs training schools included some 450 hours of language instruction, of which 330 hours was practice in drill sessions using Japanese-speaking instructors. Area instruction consisted of approximately 140 hours of instruction dealing with particular military and civilian area problems.

During the year, 121 handbooks containing essential political, economic and cultural information about Europe and the Far East were completed. While these were primarily important as training texts, the handbooks proved of great assistance in the detailed planning of military government operations and were also used extensively by the State Department, the Navy Department, the Foreign Economic Administration, the United Nations Relief and Rehabilitation Administration, and friendly foreign governments.

Chapter 9. RESEARCH AND DEVELOPMENT

With the war in Europe entering its final combat phase, and with the war in the Pacific entering a new stage, ASF research efforts were intensified during 1945 to develop weapons and equipment which would insure that our troops had every possible technological advantage over the enemy.

Operations in the Pacific and in Burma and China constantly emphasized the need for specialized weapons and equipment for jungle warfare. With both steel and aluminum no longer in critical shortage, these materials were once more used for a wide variety of equipment where climatic conditions and the nature of the terrain required moistureproof and light-weight matériel. Metal ammunition containers replaced fiber containers, and a rocket launcher of aluminum was introduced. The sniper's rifle was improved and the cal. .30 carbine redesigned for selective full or semiautomatic fire. For jungle troops and troops employed in amphibious operations new combat tropical boots and waterproof knee boots were developed. The employment of very heavy bombers against Japan necessitated the development of adapters for the multiple suspension of bombs in order to utilize the total bomb carrying capacity. And there was another phase to the development work. For example, a small portable ice cream plant was built to accompany troops to forward tropical areas.

A major problem of the year was the development of equipment and techniques for defeating underwater and beach obstacles in preparation for the final assault upon Japan. For the destruction of bunker pillboxes, caves, and other fortified positions, numerous improvements were made in portable flame throwers, tank-mounted flame throwers, demolition rockets, fire bombs, and bulldozers. A new fuze was introduced for artillery shells for use against concrete walls and emplacements. The extensive launching of robot bombs by the Germans during 1944 gave new impetus to our own rocket and guided missiles programs. Defensive measures such as radar directors and new anti-aircraft fuzes achieved considerable success in combating both the V-1 and V-2 bombs. Airborne operations across the Channel revealed the need for assembling paratroopers at night. Accordingly, infrared beacons, flashlight filters, and viewing instruments were developed.

Tank operations in Northern France and the Rhineland emphasized the need for a heavier tank than the American M4 series of tanks used so effectively in the North African campaign. A German tank of 60 tons was introduced in North Africa in 1943, and was available in some numbers in Western Europe by the summer of 1944. In direct combat the Tiger Tank proved superior to the much lighter American tank which had less armor protection and a smaller caliber

gun. The M4 tank, however, was more mobile and had a gyro-stabilized gun mounting. In order to provide American forces with a comparable weapon, the Heavy Tank M26, mounting a 90-mm gun with greater armor protection, was quickly completed. The first tanks were introduced in the front lines in February 1945, and proved to be very effective in the Rhineland and final assaults upon the Germans.

The heavier armor used by the Germans also required the development of high velocity armor piercing ammunition for use in American artillery weapons. This shell consisted of a tungsten carbide core inclosed in an aluminum casting. The extensive use of land mines, particularly nonmetallic mines, by the retreating Germans necessitated the assignment of a high priority to all development work for improving our own mine detection and destruction devices. The



The M26 Tank

introduction of the spin-stabilized rocket caused a major change in the rocket development program which eliminated the fin-stabilized types. More recent operations, particularly on Okinawa, demonstrated the need for protection of the individual soldier against shell fragments. In order to reduce casualties as much as possible, lightweight armored aprons and vests were developed and shipped to the Pacific on a high priority.

Previous measures taken to bridge the gap between the laboratory and the battlefield were continued during 1945. The technical services of ASF sent additional demonstration teams to all theaters to introduce new equipment to combat commanders so that the techniques would be understood and requirements visualized. The publication of two monthly documents reviewing latest development projects was continued with increased distribution. The second and third ASF exhibits of new matériel were held on 2 October 1944 and 9 April 1945. The second exhibit featured such items as a new radar set for high precision aircraft bombing, the new light tank, a new mobile artillery piece, and swimming devices for tanks and gun motor carriage. The third exhibit featured recoilless rifles, various mortars, the VT fuze, and the new floating bridge. Upon the recommendation of the Chief of Staff, Members of Congress and of the Press

were invited to inspect all but the most secret equipment shown at the third exhibit.

The number of development projects under way in all the technical services increased during the year until an all-time high of 2,044 projects was reached in December 1944. Of these, 1,344 were ordnance projects. During the last half of the fiscal year, an intensified effort was made to reduce the development program by eliminating less essential projects. A War Department Committee on the Reduction of Ammunition Types reviewed requirements for various kinds of ammunition and eliminated those deemed nonessential for further operational use. In March 1945, the ordnance program cut 200 projects from its program by canceling less essential projects and by integrating a number of others. By June 1945, the ASF research and development program numbered 1,541 projects, of which 882 were for ordnance equipment. Funds available for research and development work did not change appreciably from the preceding fiscal year. In 1944, the expenditures amounted to about 164 million dollars and in the fiscal year 1945, to about 166 million dollars.

The Army Service Forces continued to work closely with the National Defense Research Committee of the Office of Scientific Research and Development. By June 1945, this committee was carrying out research work on more than 300 projects for the Army. Of these, 90 were of primary interest to the Army Air Forces, 78 to the Signal Corps, 58 to the Ordnance Department, 18 to the Chemical Warfare Service, 14 to the Corps of Engineers, and 10 to the Quartermaster Corps. In addition, 26 projects were of joint interest to the Army and the Navy and 9 were of a miscellaneous nature. The NDRC administered the research work on all or a substantial part of the following programs: prevention of gun erosion, studies of defensive structures and blast effect, rockets, special fuzes, guided missiles, fire control, high explosives, flame throwers, thermal devices, radar countermeasures, land mine detection, and metallurgical studies. The National Defense Research Committee contributed greatly to the Army's development program, as evidenced by ASF procurement amounting to several billions of dollars during 1945 on matériel development primarily by the committee through its work with university, industrial, and governmental agencies.

Much of the work of the National Defense Research Committee was fundamental research of a long-term continuing nature. Steps were taken toward the last of the year so that the Army might continue these investigations by transferring contracts to the War Department or by negotiating new contracts directly with the agencies utilized by the Office of Scientific Research and Development. Several programs had been transferred by 30 June 1945, and a firm basis was laid for future activities of this nature.

The Committee on Medical Research in the Office of Scientific Research and Development continued to work with the Office of The Surgeon General. A 7-million dollar program of this committee assisted materially in solving many of the Army's medical problems, especially those of malaria control, insecticides, insect repellents, and curative drugs. The National Inventor's Council received additional suggestions during the year for new equipment or for methods of improving existing military items. By March 1945, the council had

handled nearly 344,000 proposals and inquiries; of these, 40 proposals were adopted by the technical services of the ASF. Perhaps the most outstanding suggestion received and used by the Army was one for the preparation of cargo trucks for airborne operations.

On 5 May 1945, just before the formal surrender of Germany, the research and development program of the ASF was altered by concentrating attention on projects of intrinsic value against the Japanese or projects of long-range continuing importance. Projects for the development of equipment for use only against the Germans were canceled. As a result of the review after VE-day, 36 projects were canceled and 34 projects were reclassified as of value for use against Japan. Limited procurement of experimental and test model equipment was also cut back. The total authorized procurement of this type of material was reduced from 1.8 billion dollars to 1.3 billion dollars.

The Committee on Postwar Research, appointed by the Secretary of War and the Secretary of the Navy in June 1944, under the chairmanship of Mr. Charles E. Wilson, prepared a report recommending that an interim Research Board for National Security be set up under the National Academy of Science. In December 1944, the Secretary of War and the Secretary of the Navy jointly requested the National Academy of Science to establish this board, which was done early in 1945. Ten Army members were appointed, including five from the Army Service Forces. The primary purpose of this board was to assist in providing for continued civilian participation in the long-term scientific problems of national security. The technical services of the ASF outlined programs which they felt covered urgent research problems that should be started at once by the Board. Legislation for the establishment of a postwar research organization was introduced into Congress during the year.

Ordnance Research and Development

During the fiscal year 1945, a total of 360 new items of ordnance equipment was standardized. As usual, these included items which had been under development for a long period of time as well as others which were improvements upon existing equipment. New items ranged all the way from a new armor-piercing, cal. .50 cartridge for aircraft machine guns to the 45-ton heavy tank.

The effort to provide special weapons to overcome specific problems of the European war led to the development of high velocity guns and ammunition, a concrete piercing fuze, and the new series of heavy tanks. In order to meet the peculiar conditions of the Pacific, improved and larger mortars, mud sleds, and new methods of ammunition packing were developed.

Among the notable developments of the year were two recoilless pieces of medium "artillery"—the 57-mm and 75-mm recoilless rifles. Since they have no heavy recoil mechanism, these rifles are easily transported by hand, can be fired from the shoulder and from tripods, and yet have the range and accuracy of an army rifle combined with the destructive effect of medium artillery. A 20-round magazine was provided for the 75-mm aircraft gun which made that gun actually a very heavy machine gun. A new 105-mm gun was developed for airplane mounting. The highly secret fuze, the VT, which had been

developed in previous years, was employed most successfully in bombs, antiaircraft shells, and in field artillery shells during the year. It was particularly useful against the German V-1 bombs during the attacks on London and Antwerp.

Aircraft artillery development continued in the effort to improve, refine, and reduce the weight of ordnance equipment on aircraft. Work went ahead in reducing the weight and in increasing the cyclic rate of fire of the 20-mm gun. New belt links, linking machines, flash hiders, and feed mechanisms were introduced on aircraft guns. The Air Forces were provided with a 75-mm gun with an installed weight of 1,200 pounds and a rate of fire of 20 rounds per minute. By the end of the year the weight had been reduced to 1,000 pounds and the rate of fire increased to 40 rounds per minute.



The Recoilless, 57-mm Rifle

By 30 June 1945, thirty pilot models of a new 105-mm aircraft gun were under manufacture. This gun, successfully fired on the ground and in the air, was the outgrowth of an original test with a 105-mm howitzer with blast tubes added. The blast tubes were discarded in favor of increasing the length of the howitzer tube by 48 inches, thus moving the tube into the gun category.

Since airborne operations will be increasingly important in the Far East, a number of improvements were made in the methods for delivering ordnance supplies from the air. Containers for equipment and ammunition which were both lightweight and durable were made to be dropped by parachutes. At the same time, the weapons to be dropped in these containers underwent parallel study.

In the ammunition field, special attention was devoted to developing high velocity ammunition for tank and antitank guns, methods of

reducing gun erosion, and the introduction of bomb clusters. Special attention was also given to ammunition which could be used to assist in mine clearing operations. Several new hand grenades were introduced including one which because it was noiseless, sparkless, and smokeless, did not betray the position of the thrower. A new fuze was designed for use on large quantities of captured Japanese bombs.

A new high velocity 90-mm gun fires a projectile which can penetrate the heaviest enemy tank at any point of contact. A recoilless 60-mm mortar was developed which could be fired from a machine gun tripod or from the shoulder. Experiments with larger sizes of mortars were also continued during the year.



Multiple Rocket Launcher

The increasing importance of rockets led to a number of important developments during the year. Multiple tube launchers were produced for mounting on many different types of combat and general-purpose vehicles. A high explosive antitank rocket was made, as well as a new rocket for use against artillery emplacements. Rocket launchers varied from the bazooka to a new 60-tube, 4.5-inch rocket. Rocket propulsion units were also developed to carry explosives over mine fields to detonate mines. Other propulsion units assisted the take-off of aircraft.

The main trend in the development of tank and combat vehicles was toward greater fire power and thicker armor without diminishing mobility. Heavier and more powerful self-propelled artillery was also under way. The new 46-ton heavy tank was standardized in April 1945, as the M-26. From this basic model came a whole series of heavy tanks of seven different types. One mounted a 105-mm howitzer in place of the 90-mm gun, while others had higher velocity 90-mm or 105-mm guns, or heavier armor.

Quartermaster Research and Development

The Quartermaster Corps sent observers to the various theaters of operation in 1945 to study the functioning of all Quartermaster items

under combat conditions. As a result of the information thus gained, numerous improvements were made in design and materials.

A main objective in food research was to lessen the monotony of the emergency ration. Although intended only for use a few days at a time, the *C* ration was often eaten for longer periods because of difficulties in supply and distribution. In order to make this ration more palatable, several new meat and vegetable items were added. By the end of the year, there were ten meat units for the *C* ration. In addition, a tin jacket containing calcium oxide was developed for packaging one unit of the *C* ration. When activated by the addition of water, this compound produced heat sufficient to raise the temperature of the food to approximately 160° F. in from 10 to 15 minutes. The chemical compound was nontoxic, required no flame or fire and produced no smoke. Improvements in the wrapping of *K* rations assured the freshness of the food and reduced losses from spoilage.

Clothing items were simplified during the year and many eliminated. At the end of the year, experiments were being conducted to design a lesser number of items which would fully equip the soldier. In this way production, supply, and distribution would be simplified. After a comprehensive study of fabrics and designs, a poplin two-piece uniform suitable for tropical and jungle warfare was recommended and approved pending final tests overseas. As a result of the determination of the insulation values of various materials, double-faced wool pile was added to clothing for cold climates. The officer's wool field jacket was standardized during the year and specifications were developed for officer's tropical worsted uniforms.

Several new footwear items were placed in use in 1945. A knee boot affording complete protection against water to above the knee was only slightly heavier than the five-buckle overshoes. It was held on by buckles over the instep, straps around the leg below and above the knee, and by a strap attached to the belt. A new five-buckle overshoe was designed to fit over the combat boot. For tropical use the combat boot was modified by using a nylon upper, rubber-cleated soles and heels, and drain eyelets. The advantages of this boot were durability, foot support, good traction, and good fitting qualities. It was also lighter, cooler, and would dry more quickly than the combat boot.

Research was continued into the resistance of plastic laminates to projectiles. A large-scale production program of doron plastic armor was begun for the Navy Department for use in the armoring of life jackets. Extensive investigations were made of various waterproof fabrics for tear strength, adhesion, abrasion and aging before use in ponchos, raincoats, and waterproof containers. A new material was being developed at the end of the year which promised to solve past objections to the old type of air and vapor impermeable fabric.

In the field of molded plastics, several new items were perfected including disposable liners for mess trays and a machete sheath to replace the canvas type. A crash helmet was adopted by the armored forces. A new technological advance was the development of scratch resistant plastic lenses.

Research in the use of shrink-resistant treatments for wool items progressed to the point where all standard issue socks were so treated. With an improved life for these socks, a savings of nearly a million

and a half dollars per month in procurement should be realized. Research continued in the application of this treatment to blankets, wool underwear, and uniform fabrics.

Among other important textile developments were a new pack with two sections enabling men to segregate items necessary in combat from less essential items; a lightweight tent designed for use in areas where transportation was by packboard and where extreme cold was encountered; improved types of headwear for workers in special occupations; a portable squad shelter to provide a more satisfactory and durable roof than that obtained with cotton duck; and laminated webbing.

During the year, the Quartermaster Corps was able to obtain considerable quantities of nylon from parachute cloth. This was used for insect netting, since it will last many times longer than the cotton netting previously used in the Pacific. Because nylon is mildew resistant, the netting will not deteriorate in jungle climates; in addition it had greater strength.

Field experience indicated that much of the Quartermaster mobile and portable equipment was too heavy. The mobile shoe repair, laundry and clothing repair units were redesigned to weigh from one-half to one-fifth their previous weight. The trailers were shortened from 18 and 20 feet to 9 feet; a 10-ton refrigerator trailer was redesigned of aluminum, the weight being reduced from 15,000 pounds to 7,300 pounds. An all aluminum portable ice cream plant was put in production and a metal roof shelter was developed as a substitute for the squad tent. Insulated food containers were redesigned, retaining approximately the same capacity but reducing the weight from 45 pounds to 16 pounds. A revised field bakery was expected to be completed early in 1946, which would produce sufficient bread a day for 90,000 men when operating as a complete bakery company, and which could be broken down into three independent units each capable of supplying 30,000 men. This unit was intended to be used in the Pacific. A tiny ration heating stove intended for individual use was also being developed. It could be easily carried by the individual soldier and would burn several available fuels with almost equal efficiency.

A 2-year program of laboratory and field testing of commercially durable water-repellent finishes for cotton fabrics progressed to the point where four finishes were approved as meeting the minimum Army requirements for field use, and five procedures were adopted for evaluating the water repellency of cotton fabrics.

Extensive tests were also in progress to develop improved products for laundering in salt water. These were for use on hospital and other ships and would also improve the quality of work in mobile laundries. A number of new products were also developed for cleaning and sterilizing clothing and equipage items.

A new compound was introduced for the extermination of rodents. Another compound for the same purpose was also issued, but its scarcity limited its use to emergency situations where plague was threatened.

Considerable work was carried on to develop materials for impregnating clothing to prevent attachment of the mites which transmit scrub typhus. A compound in which clothing could be dipped was supplied for this purpose to be used in the field. A number of improvements were also made in DDT during the year.

Some 23 research projects in the petroleum field were completed in 1945. These included the development of a portable drum cleaner, a suitable drum liner, dehydration for preserving collapsible drums, and the development of the elliptical collapsible cell. Among the pieces of petroleum equipment standardized during the year was a 2,500-gallon tank truck and trailer, a 750-gallon skid tank, collapsible containers with capacities from 750 to 3,000 gallons, and the 5-gallon cam closure container.

Medical Research

Medical research and development activities increased both in scope and number during the year. Whereas on 1 July 1944, there were only 51 active projects in the Medical research and development program, during 1945, 292 new projects were initiated, of which 236 were completed. During the same period, 164 new items were standardized.

As in previous years, the efforts of the Army Medical Department were concentrated on developmental research: the design and construction of professional and field equipment items, the improvement of methods of treating and combating sickness and disease, and the production of all other necessary technical data. The major portion of this urgent development work was conducted in the Department's own research laboratories. At the beginning of the year, these included the Medical Department professional service schools, the Army Medical Center, the Medical Department Equipment Laboratory, the Armored Medical Research Laboratory, the Veterinary Research Laboratory, and the Army School of Roentgenology. Before the close of the year, development projects were also under way at two new Medical Department installations—the Army Medical Nutrition Laboratory, Chicago, Illinois; and the Ophthalmological Surgical Center at Wakeman General and Convalescent Hospital, Camp Atterbury, Indiana. In addition to these seven Medical Department facilities, certain emergency projects were also conducted at general and station hospitals, and in civilian laboratories operating under Army contract.

One of the outstanding trends in medical research and development was the emphasis placed on providing equipment for the professional care and rehabilitation of returning veterans. A thorough study of orthopedic shop equipment was conducted by the Medical Department, resulting in the standardization of 397 new items. This list includes a sufficient variety and quantity of equipment to fulfill the major requirements of orthopedic shops both at amputation centers and in general, regional, and station hospitals. As a result of recommendations made at a national conference held in January 1945, on the standardization of artificial lower limbs, tentative specifications for the component parts of lower extremity prosthesis were compiled, and a program for the assembling and fitting of these prostheses at Army hospitals was underway by 30 June 1945.

A seat type crutch, an invalid walking frame, and special back rests and mattresses for use in hospital train bunks were also among the items developed by the Medical Department for the benefit of the disabled veteran. In addition, The Surgeon General's Office cooperated closely with the Office of the Quartermaster General in

the selection and standardization of athletic equipment for use in the reconditioning program; the development of aluminum furniture for convalescent hospitals; and in the production of numerous items for use in occupational therapy. In cooperation with the Ordnance Department, a 12-litter, bus type metropolitan ambulance was developed, and a project to produce a substitute standard metropolitan ambulance using a light sedan body was nearing completion. In the fields of physical reconditioning, orthopedic surgery and maintenance, and occupational therapy, specifications covering 1,504 recently developed or commercially available items were approved in 1945.

Notable contributions were also made in the development and improvement of oversea field equipment. Because of the unsatisfactory design of field sterilizers, a program was initiated early in 1944 to improve these items. At the end of the fiscal year this program was completed, with four sterilizers completely redesigned in monel metal. Research conducted under the whole blood program yielded a newly modified field blood transfusion assembly, a portable blood refrigeration unit, and a new lightweight expendable insulated container for shipping whole blood by air to theaters of operations. Another important development was the adjustable field operating table, a collapsible table constructed entirely of aluminum, equipped with all necessary accessories including headrest. Other experimental work resulted in the production and standardization of new pack-saddle, mountain, and ski litters together with a special litter rack adjustment for the jeep. Among the more important miscellaneous items produced during the year were a field laboratory set for industrial hygiene engineers, a portable dental operating lamp, an electric motor for foot dental engines, a darkroom tent for field X-ray units, an electrical conversion unit for field incubators, and a 2½-ton, 6 x 6, medical laboratory truck.

A number of important oversea equipment items were produced in conjunction with other technical services. In cooperation with the Chemical Warfare Service, a screening kit for the detection of poisonous chemical warfare agents in foods was developed and standardized. A project with The Quartermaster General's Office resulted in the development of a lightweight dual temperature medical refrigerator for the use of forward medical units. In collaboration with the Signal Corps, experimental work on a special medical camera, requiring no technical photographic training to operate, was nearing completion. Finally, throughout the year The Surgeon General's Office conducted a large number of toxicity studies for the Quartermaster Corps, rendering opinions on a wide variety of items, including adhesives, rubber earplugs, plastic and metal food containers, mildew-proofed tents, and fireproof clothing.

Signal Corps Research and Development

During the fiscal year 1945, the Signal Corps standardized 152 new items of communications equipment. Among these were a new portable telegraph terminal providing one two-way telegraph channel plus one-telephone channel. A new portable responder beacon aided aircraft to navigate to a designated dropping area. This beacon consisted of a receiver-transmitter unit, a standard power supply unit and an antenna system. A new radar set was developed for challeng-

ing aircraft. A new general purpose twisted pair field telephone wire was developed which will replace all existing assault wire and eventually all field wire. A direction-finding attachment was developed for use on any FM radio receiver operating in a certain frequency range. A new wire dispenser will facilitate the laying of wire at various speeds from that of a man or a moving vehicle to a liaison type aircraft. Holding about three-quarters of a mile of wire, this dispenser was expendable and could be abandoned when the wire was laid. A new general purpose ground radio direction finder was built for primary use by intelligence organizations in locating enemy radio transmitters.

All reports received from overseas during the year indicated that Signal Corps equipment was performing in a highly satisfactory manner. General Bradley declared that the drive across France in July and August 1944 depended upon a shoestring—"that shoestring was the radio link." Radio relay equipment proved highly useful both in Europe and in the Pacific. Radio Set SRC-300 for the new pack radio proved itself under all kinds of conditions in the Pacific area—in providing communications between observation posts or reconnaissance patrols and companies and battalions. New waterproof sets were used in the invasion of the Philippines and continued to perform in spite of immersion and the humid climate. A new radio set was designed and produced to provide voice communication in field artillery and tank destroyer units in the Pacific. Weighing about 50 pounds, the set could be carried by one man on foot or by a pack animal, or could be mounted in a vehicle. The normal range of operation was approximately five miles.

All reports from overseas which indicated any unsatisfactory equipment performance were carefully analyzed and corrective research immediately begun. For example, recurring reports of a failure in the resistor capacitor pack in a particular radio set started an investigation which resulted in the complete redesign of the set to eliminate resistor capacitor packs entirely. Other reports that certain switchboards were too heavy to be suitable for amphibious operations led to the design of a new lightweight switchboard.

In July 1944 field units were established in the United States to treat Signal Corps equipment for tropical use before units went overseas. Altogether, some 56,500 pieces of equipment belonging to 25 divisions and 78 smaller organizations of the ground forces were thus treated during the year. Also, moisture-fungiproofing kits were supplied oversea theaters.

Twelve new waterproof bags for the protection of vehicular-mounted radios were developed by Signal Corps laboratories working in collaboration with the Quartermaster Corps. These bags were approved by the Landing Vehicular Board and were recommended for standardization at the end of the year. Six other types of waterproof bags were also designed specifically for the protection of Signal Corps equipment used in amphibious landing operations. When loaded with equipment, all these bags would float and even support a soldier in the water.

The anti-aircraft-gun laying radar set was successfully adapted during the year to the location of moving ground targets during the advance into Germany. This use of radar proved of great value in

harassing enemy supply routes at night. The comparatively accurate location of targets resulted in a substantial saving in ammunition and forced the enemy to abandon his main supply roads on several occasions.

A new 2½-kilowatt radio teletype station was developed to provide a more extensive range than that of the set previously employed. A new dry battery was also introduced with a life expectancy from three to six times as long as that of the normal dry battery of comparable size and weight. It did not require refrigerated storage and permitted much more efficient operation. All oversea theaters expressed a need for tank radios to communicate with supporting infantry. Improvised communications facilities had proved unsatisfactory. To meet this



Radar Anti-Aircraft Warning Set

need, a modified version of the "walkie-talkie" was developed and introduced in the field through new equipment introductory teams. After a trip to the Southwest Pacific, the Chief Signal Officer directed that an earth borer be mounted on a Diesel power bulldozer. This was developed and a new kit standardized, including earth borer and pole-setting accessories for the use of right-of-way construction teams. This process will speed up the erection of telephone and telegraph lines.

A review of the technical requirements for wire communications equipment, suggested by various theaters of operations, indicated the need for reducing the weight and space requirements of forward area telephone switchboards, greater maximum line and switching capacity for rear area switchboards, simpler and lighter teletypewriter sets, lighter and more compact equipment for use in forward combat units, greater flexibility in intercommunication between wire and radio nets,

and the introduction of one lightweight general-purpose wire for use in forward and intermediate areas. All of these needs were under study and experimentation during the year.

The research accomplishments in radar were revealed during the year in a special booklet released by the Office of War Information.

Engineer Research and Development

The Chief of Engineers had 155 projects under development in 1945. Seventy of these were completed and 186 technical reports were published covering new developments and the tests performed. A new floating bridge, the M4, was standardized for carrying the heavy tank across streams. Other items were a four-man motorized pneumatic



M4 Ponton Bridge

boat, a trailer-mounted assault bridge, a new mine-detector set, new portable water-purification equipment, a three-kilowatt generator set, new mine-clearing devices including a mine-clearing detonating cable, new camouflage materials, a tank-mounted bulldozer, a new portable sawmill, and a wide-track crawler tractor.

Military operations in Europe and the Pacific provided tests for new Engineer equipment which could not be simulated in the United States. Performance under combat conditions revealed deficiencies in existing items and disclosed needs for modifications to meet field conditions. One important change made possible by VE-day was the sole use of Diesel engines in such pieces of equipment as generators, cranes, and shovels. Gasoline engines experienced inherent difficulties in operation in the hot and humid conditions of the Pacific.

The Diesel engine proved much more satisfactory. Accordingly, the decreased quantities of equipment required after victory in Europe led to the exclusive use of Diesel engines in all heavy equipment shipped to the Pacific.

Some research work continued to be made into possible improvements in seacoast defenses. Research in the field of protective design was also continued, particularly of protection from the blast of larger and heavier missiles.

During the year upward of 1,200 items of captured enemy equipment were examined by the Engineer Board. There was very little specialized engineering equipment in use by both the Italian and German forces. The Japanese, in their island operations, used a miscellaneous collection of engineer equipment, many of which had its origins in American pieces of questionable age.

Chemical Warfare Research and Development

In the fiscal year 1945, the Chemical Warfare Service made a number of important improvements in offensive munitions including improved incendiary bombs, new flame throwers for tanks, and a recoilless 4.2-inch chemical mortar. In all, 65 articles were standardized, over 400 new specifications were written, and some 125 different items of technical literature approved.

The development work on the 4.2-inch recoilless chemical mortar was completed during the year and this piece of equipment standardized for general Army use. The new model was designed to extend the versatility of the standard mortar, which had already proved effective as a close support weapon in both amphibious and land operations. This mortar was capable of low-angle fire at ranges up to 1,500 yards and high-angle fire to a range of 3,800 yards. It could be taken apart into units readily carried by individuals.

The variety of ammunition for the 4.2-inch mortar was increased. A color smoke shell was perfected to provide a marker for spotting. An illuminating shell was also developed as well as an incendiary shell and two types of improved white phosphorous shells. New fuzes were also developed.

The technical resources of the Chemical Warfare Service were applied to developing still more effective flame throwers, since the potency of this weapon had been amply demonstrated in all theaters. An outstanding accomplishment, made in cooperation with the National Defense Research Committee, was the development of a main armament flame thrower for use on medium tanks. In cooperation with the Ordnance Department, work was also done on the design of a new flame-throwing tank. In addition, auxiliary mechanized flame throwers were developed to be installed in tanks in the field. The first large-scale use of mechanized flame throwers occurred in 1945 with the delivery of a large number of units to combat areas.

The necessary mixing and filling accessories for large flame throwers were also provided. Production was begun on mixing units designed for rapid and simple operation in filling flame throwers with both fuel and propellant gas. With portable flame throwers continuing to play an important role overseas, efforts were directed toward making the operation and service of this weapon more efficient. Changes included a new safety valve assembly, a detachable pressure tank to

simplify operation and reloading, and a portable hydrogen generator for servicing.

Incendiary bombs constituted 40 percent of the bomb loads dropped on strategic targets in Germany by the Eighth Air Force. By the end of the year, incendiaries were being used in even larger proportions in the attacks upon Japan. A number of improvements were made in incendiary bombs, clusters, and fuels. Several lightweight bombs were designed. Standardization was completed on both 6-pound and 16-pound incendiaries, bombs which were used extensively by the 20th and 21st Bomber Commands against Japanese cities. These incendiaries included an explosive charge to discourage fire fighters. Improvements were also made on heavy incendiary bombs. The Chemical Warfare Service developed igniters and mixer units for the 165-gallon fuel tanks dropped as fire bombs by the Air Forces. Various operational techniques satisfactory to both the Air Forces and the Navy Department were standardized during the year.

A new adapter was also standardized to enable a B-29 to bear a large quantity of 100-pound incendiaries. In addition, a new improved 100-pound incendiary bomb was developed. A new 500-pound cluster was standardized.

With widespread use of incendiary munitions it became necessary to forestall any possible shortages in the raw materials required. A new formula was found requiring smaller amounts of critical materials for thickening agents in both incendiary bombs and flame throwers. At the same time improved fuels for the portable and mechanized flame throwers were developed. Various tests were conducted to determine the relative effectiveness of thickened and unthickened fuels. A new form of thickening agent was specifically designed for Navy Department use and its manufacture was begun on a large scale.

The Chemical Warfare Service produced several new items of smoke munitions including a smoke bomb of small size that could be clustered in units of 100 and 500 pounds, floating smoke pots for laying down smoke screens to cover amphibious operations, and a new colored smoke bomb for use by the leading aircraft to mark a bomb release line. Modifications were also made in the portable mechanical smoke generator which improved its general performance.

A considerable amount of research was still devoted to the development of more efficient war gases. The Army continued to be prepared for any possible outbreak of gas warfare. Captured enemy war gases were studied closely.

A new method of impregnating clothing was developed which afforded resistance to "H" vapor, and a new impregnating agent was developed which afforded better protection against recently discovered chemical agents. Work was also continued on improving the designs of protective clothing. New molds were developed for the combat gas mask and the improved mask was given extensive field testing. A head-wound gas mask was developed and manufactured in large quantities for the Medical Department. Work was also well under way to design protective equipment which would meet the special needs of tank crews.

During the year the Chemical Warfare Service for the first time entered the field of investigating methods for controlling insects and

rodents. This involved joint efforts with the Quartermaster Corps, the Surgeon General's Office, the Corps of Engineers, and other agencies. During the year an improved tear gas grenade for riot control was developed in conjunction with the Military Police Board.

Transportation Research and Development

The Transportation Corps standardized a number of items of marine equipment during 1945. Among these was a 25-man-capacity life float to replace the float previously in use. The new float was light, durable, and fire resistant. It would accommodate 10 persons on deck and support an additional 15 people in the water. A four-man-capacity lifeboat was developed for use with the aircraft rescue boat. Because of the increase in the dimensions and weight of submarine mines, improvements were made in the structure of the mine planter for harbor work. New mine-handling gear was also necessary. A new life preserver was standardized for use both in abandoning ship and for assault landings when a soldier had to carry a pack and equipment as well as a life preserver. Studies were also made of various methods of propulsion in an effort to improve the efficiency of the screw propeller.

Considerable attention was given to standardizing the designs for marine equipment in order to reduce the number of types in Army service. By the end of the year there were only 31 separate items of marine equipment in production compared with 71 items a year before. For example, three types of tugs were being produced compared with eleven types in June 1944.

Development projects were under way during the year to design a 70-ton flatcar to transport heavy tanks by rail. A new 50-ton Diesel locomotive was being developed to meet oversea needs for a rugged and adaptable locomotive with minimum spare parts requirements. New 20- and 30-ton gasoline locomotives were also being designed capable of operation away from fixed installations for water and fuel supply. These locomotives were expected to be used in combat zones and be capable of developing maximum power with axle load and weight distribution limited to that of the cars which it would haul.

General

This review suggests the scope of ASF research and development activities. In general, only completed projects have been mentioned. It was War Department policy to announce new weapons and equipment when they were used against the enemy. In the meantime, many secret developmental experiments were continued in expectation of finding yet more improved models or altogether new items. After the fiscal year had come to an end, one of these was revealed by the War Department—the highly secret work on development of an atomic bomb. There were other secret projects operated by the ASF which had to be kept from general knowledge for reasons of military security.

Chapter 10. PROCUREMENT REQUIREMENTS

The fiscal year 1945 was a year of increasing procurement requirements until shortly before VE-day. Then began the adjustment to the needs of a one-front war.

In the last 6 months of the fiscal year 1944 a concerted effort was made to reduce demands upon procurement in every possible way. Authorized stock levels in the United States were reduced and the quantities authorized to be held in oversea theaters were cut. Estimates for replacements for equipment were carefully reviewed and in many cases reduced. The policy was adopted of accumulating only small inventories in the United States and of relying upon production capacity to meet any sudden demands for those items in which changes in rate of production involved no great delay in realization.

Methods for computing Army supply needs underwent continual refinement and improvement in the development of the supply control system. These computations took into account all the expected demands, making proper allowances for losses, wear and tear, new troop activations, deployment from one set of climatic and terrain conditions to another which might be completely different, the establishment of new supply bases, and needs of the Navy, Lend-Lease, and civilians in occupied territory. The total demand less current inventories and matériel expected to be returned to stock was the procurement objective—the amount which was needed to fulfill all requirements. For some items involving critical materials, facilities, or skills, the procurement objective could not be produced. In other cases reductions in demand were so sudden that the procurement objective was overproduced before contracts could be terminated. The actual quantity which was to be produced and which was authorized for procurement was known as the programmed procurement.

When the Army Supply Program was computed in October 1944, the programmed procurement for ground equipment to be purchased during the calendar year 1944 amounted to 18.4 billion dollars, while total programmed procurement, including matériel for the Air Forces, Lend-Lease, and civilian supply, came to 23 billion dollars. For the calendar year 1945, programmed procurement for ground equipment was estimated at 17.5 billion dollars and total programmed procurement at 22 billion dollars. These values were larger than the estimates of February 1944, because of increased demands coming from the European Theater of Operations.

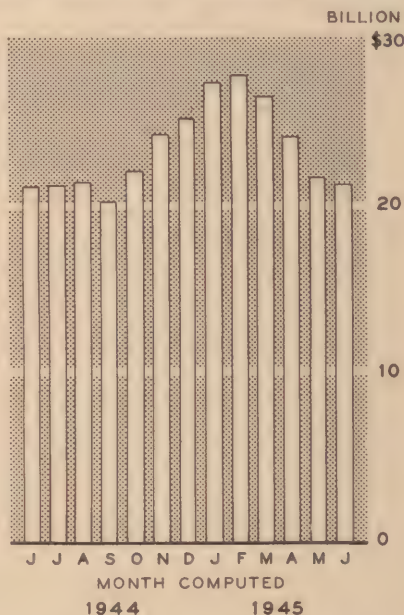
As the fighting in Europe increased in intensity, anticipated needs for ASF supplies began a steady rise. This was reflected primarily in the programmed procurement for the calendar year beginning 1 January 1945. From a total programmed procurement of 22 billion dollars determined in October 1944, the 1945 programmed procurement rose to nearly 28 billion dollars in February 1945. The Ardennes

counteroffensive of the German Army in December, and January, cost the American Army a considerable quantity of matériel; the rate of ammunition expenditures increased continually; the United States undertook to arm eight new French divisions to increase the size of the Allied force fighting the Germans; the recapture of the Philippines entailed a program for equipping Philippine forces; the opening of the Ledo Road made it possible to get additional supplies into China. All of these factors increased the programmed procurement of the Army Service Forces.

When the German forces surrendered, as announced on 8 May 1945, the Army Service Forces had already taken the necessary steps to

CHANGING PROCUREMENT PROGRAM FOR CALENDAR YEAR 1945

TOTAL ASF



reduce its programmed procurement for the calendar years 1945 and 1946. Since the defeat of Germany was clearly apparent by April, instructions were issued in that month to reduce all procurement immediately to the quantities required for the war against Japan and the maintenance of occupational forces in Europe. The ASF had begun to estimate procurement needs for a one-front war as early as December 1943. The most recent computation was put into effect in the last week in April.

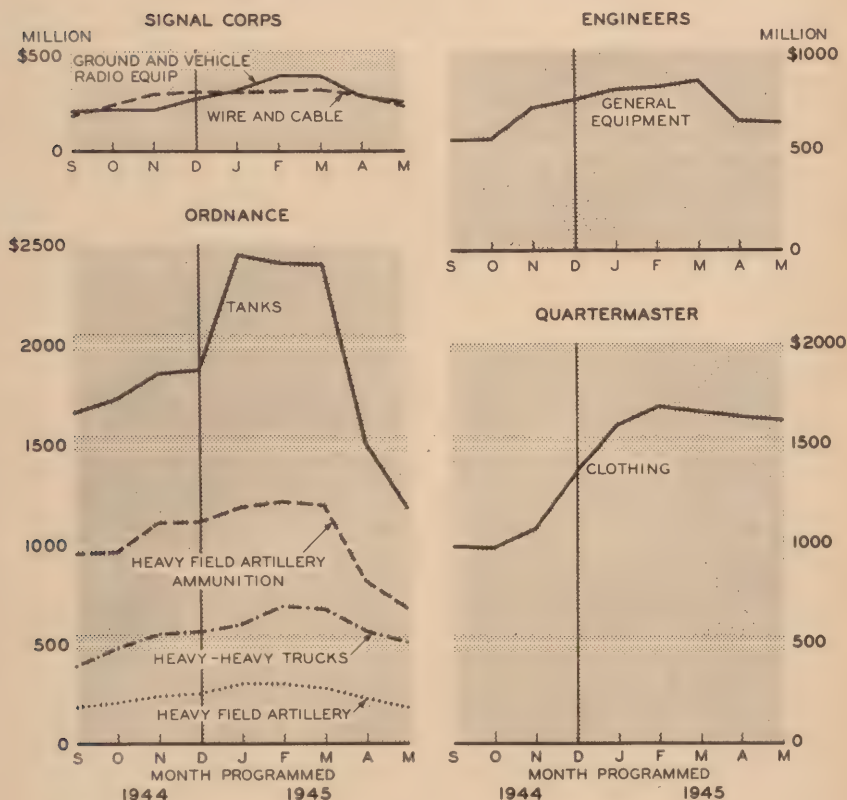
By 30 June 1945, programmed procurement for the calendar year 1945, had been reduced to 21 billion dollars, a reduction of almost 24 percent from the total required for the two-front war. Of this 21 billion dollars, 17 billion was scheduled for supplies and equipment for the Ground Forces, while the remainder of the program included Ordnance and Chemical Warfare supplies procured for the use of the Army Air Forces, and miscellaneous material procured for Lend-Lease, civilian supply, Foreign Economic Administration, Red Cross, and other agencies. The programmed procurement for 1946 was estimated at 16 billion dollars, a reduction of 30 percent from the procure-

ment which would have been necessary in that year for a two-front war. A comparison of the programmed procurement on 28 February and on 30 June, revealed a reduction of one third in the programmed procurement for the last 8 months of 1945, as a result of the change to a one-front war.

The supply needs for the war with Japan were not small. The many different factors required increased quantities of some items for

CHANGING 1945 PROGRAMMED PROCUREMENT FOR CALENDAR YEAR 1945

SELECTED MAJOR ITEM GROUPS



the war in the Pacific. For one thing, the distances to the Pacific were double and even triple those to Europe, which meant larger quantities of supplies in transit in order to maintain the inventory levels needed overseas. The lack of transportation facilities in the Pacific required more road building, and railway and airfield construction. The tropical climate required new issues of clothing and larger supplies of certain types of medicine. The adverse atmospheric conditions created a need for special types of packing, crating, and preserving matériel. Moreover, some pieces of matériel deteriorated

more rapidly, thus increasing the replacement demand. The lack of adequate housing for troops in the Pacific increased the demands for tentage and prefabricated buildings. Projected amphibious operations meant greater losses in the weapons and vehicles peculiar to

**Programmed procurement for calendar year 1945
As of 28 February and 30 June 1945**

(Values in millions)

	As of		Percent change from February to June
	28 February	30 June	
All services.....	\$27,716	\$21,278	-23.2
Ordnance.....	14,728	9,931	-32.6
Small arms matériel.....	729	472	-35.3
Small arms ammunition.....	882	493	-44.1
Bombs, grenade, mines, etc.....	1,821	1,765	-3.1
Heavy field artillery ammunition.....	1,211	630	-48.0
Ammunition other than heavy field.....	2,988	1,934	-35.3
Heavy field artillery.....	296	176	-40.5
Artillery, excluding heavy field.....	706	460	-34.8
Tanks.....	2,411	1,277	-47.0
Self-propelled weapons.....	383	297	-22.5
Misc. combat vehicles.....	354	230	-35.0
Heavy-heavy trucks.....	688	532	-22.7
Light-heavy trucks.....	1,167	853	-26.9
Light and medium trucks.....	695	484	-30.4
Other vehicles and miscellaneous.....	397	328	-17.4
Signal.....	1,670	1,232	-26.2
Ground radar equipment.....	165	150	-9.1
Special ground radio equipment.....	24	25	+4.2
Ground and vehicles equipment.....	379	257	-32.2
Telephone and telegraph.....	155	116	-25.2
Wire and cable.....	299	224	-25.1
Miscellaneous.....	648	460	-29.0
Engineers.....	2,040	1,706	-16.4
Boats and bridging equipment.....	219	174	-20.5
Construction equipment.....	721	661	-8.3
General equipment.....	814	625	-23.2
Tractors, crawler type.....	286	246	-14.0
Chemical Warfare.....	778	848	+9.0
Ammunition.....	252	216	-14.3
Bombs.....	335	417	+24.5
Protective matériel.....	84	67	-20.2
Service equipment.....	4	5	+25.0
Weapons.....	7	7	0.0
Miscellaneous.....	96	136	+41.7
Medical.....	406	274	-32.5
Drugs, chemicals, biological.....	140	108	-23.6
Other medical supplies and equipment.....	266	166	-37.6
Quartermaster.....	7,564	6,759	-10.6
Clothing.....	1,687	1,479	-12.3
Equipage.....	880	697	-20.8
General supplies.....	505	354	-30.0
Service and warehouse equipment.....	167	186	+11.4
Subsistence.....	4,325	4,013	-7.2
Transportation.....	530	528	-0.4
Self-propelled vessels.....	81	83	+2.5
Nonpropelled vessels.....	31	35	+12.9
Other marine equipment.....	125	83	-33.6
Materials handling equipment.....	3	2	-33.3
Railway cars.....	44	76	+72.7
Locomotive and locomotive cranes.....	220	227	+3.2
Other rail equipment.....	26	22	-15.4

these operations. The primitive dock and storage facilities available in the Pacific required large-scale dock and warehouse construction and great quantities of materials-handling equipment of all types in order to build up our Pacific bases. The bombing operations of the Army Air Forces meant more high explosive and incendiary bombs.

Two technical services, the Ordnance Department and the Quartermaster Corps, together accounted for about 75 percent of all ASF procurement. In the transition from a two-front to a one-front war, the Ordnance Department showed the largest reduction in programmed procurement of any service. The programmed procurement for ordnance matériel in the calendar year 1945, was cut from the 14.7 billion dollars computed on 28 February, to 9.9 billion dollars computed on 30 June, a reduction of 33 percent. This curtailment resulted from the declining consumption of ammunition and other combat equipment once the war with Germany was ended. Requirements for tanks, heavy artillery, small arms ammunition, and heavy artillery ammunition were all extensively reduced. On the other hand, Quartermaster programmed procurement in the calendar year 1945 was reduced only about 11 percent in the transition from a two- to a one-front war. Food purchases were curtailed 7 percent, reflecting a projected strength decline in the Army. The requirements for warehousing equipment were increased as the war effort concentrated on the Pacific.

Programmed procurement of the Chemical Warfare Service showed an increase after VE-day. There were larger demands for incendiary bombs, for CWS equipment, and miscellaneous items. In all other technical services, programmed procurement declined after VE-day, although there were increases for such individual items as railway cars, some types of marine equipment, and special ground radio equipment.

The trends in procurement during the fiscal year 1945, can best be illustrated by mentioning various categories of war matériel.

During the first three quarters of the year ammunition requirements continued the upward trend begun in the last half of the previous year. The procurement objective in the calendar year 1944, for one type of high explosive shell to be used in the 105-mm howitzer increase from 33 million rounds to 40 million rounds between August and November 1944. The calendar year 1945, procurement objective increased from 44 million rounds to 73 million rounds, and then reached a peak of 115 million rounds on 28 February 1945. By 30 June, the procurement objective for this ammunition was back to 32 million rounds. The changes in requirements for most other calibers of ammunition were not as drastic as for this, but followed the same general pattern.

Requirements for the 2½-ton amphibian truck, the DUKW, were only slightly reduced after the defeat of Germany. The demands for this piece of equipment for use in the Pacific were much greater with the projected increase of troops in that area.

As a result of battle experience in the European Theater, plans were made to have one third of all artillery self-propelled. Accordingly, the production of motor gun carriages was expected to continue with little change during the coming year. The performance of the heavy tank, M-26, with the 90-mm gun, and the later modification with the 105-mm howitzer, was so satisfactory that both became

preferred items for the Japanese war. Since first deliveries of the new tank in the European Theater were made in February 1945, no immediate curtailment in production was projected. The requirements for the M4 tank were greatly reduced, however, after VE-day.

The demand for small arms, artillery, and fire control instruments rose during the year to a peak in October, and November, and then dropped by 30 June 1945, to a level slightly below that at the beginning of the year. As the invasion of Europe progressed, reports of combat losses indicated that existing replacement rates were too low. Programmed procurement accordingly had to be revised upward. Then, after February 1945, losses of equipment declined and with the transition from a two-front to a one-front war, reductions could be made. The carbine, for example, was a particularly popular weapon in the Pacific because of jungle and other close-range combat. With the development of a fully automatic carbine, the maximum possible production as limited by manufacturing facilities was scheduled in order to meet the demands for this weapon.

The unsatisfactory performance of the 4.5-inch gun in the European Theater eliminated the demand for this weapon. On the other hand, programmed procurement for the 155-mm howitzer and the 155-mm gun were placed at a level to permit the replacement of all 1917 and 1918 types in the hands of the Army. The 57-mm antitank weapon was also replaced by a new weapon, the 75-mm rifle. Thus, changing demands for different types of items reflected battle experience and decisions about desirable weapons for use in combat.

Programmed procurement in the calendar year 1945, for Signal Corps equipment rose from 1.2 billion dollars in July 1944, to 1.7 billion dollars in February 1945. It dropped again to 1.2 billion dollars by the end of the year. The ground radar program increased some 20 million dollars because of the development of new and more accurate equipment. There was only a 12 percent decline in this program after VE-day, since Pacific areas expressed an increasing and continuing demand for this type of equipment. Ground and vehicular radio equipment declined after VE-day, although certain particular radio sets were needed on a large scale in order to replace existing equipment in the Pacific. Programmed procurement for telephone and telegraph equipment and wire were also curtailed after VE-day.

Demands for all kinds of construction equipment and supplies increased during the first part of the year and then were cut about 30 percent after the defeat of Germany. The design of a new bridge to carry heavier and wider combat vehicles brought large-scale demands from overseas theaters. Camouflage nets were produced up to the total production capacity of the country but overseas demands still could not be met. Programmed procurement for electric generators and for water supply equipment also increased. Field fortification supplies such as sand bags and barbed wire were needed in larger quantities immediately after the German counteroffensive. Demand for construction materials for dock works did not decline after VE-day. Reductions in demand for most Engineer supplies are not anticipated until after 1 January 1946.

Demand for Medical supplies rose after 1 January 1945, for several months because of the increase in hospital capacity in the United States, and the depletion of accumulated medical supplies as a result

of unexpected consumption. As a result of the switch from a two- to a one-front war, programmed procurement of medical supplies was reduced about 32 percent.

Demand for most types of supplies procured by the Quartermaster Corps increased after 1 July 1944. The greatest demands came from the European and Mediterranean Theaters. After the break-through on the western front in July, and the subsequent stabilization of the line in September, great quantities of Quartermaster supplies were requisitioned from the United States to replace the stocks consumed during the rapid drive across France. Computed replacement factors had proved to be too low. Victory in Europe increased the demand for cotton clothing, since more soldiers had to be fitted for Pacific warfare.

The demand for transportation equipment in the Pacific was so large that few reductions took place after VE-day.

A major problem in computing the demand for supplies for the war against Japan was the collection of adequate inventory information about equipment now in Europe which might be used in the Pacific. Prior to VE-day, once supplies were shipped from the United States they were no longer carried as an asset in the Army supply system as a whole but rather as an issue to troops. Complete control of the use of this equipment remained in the hands of the oversea commander. With the end of the war against Germany, this situation was necessarily changed. The inventories held in the United Kingdom and on the continent now became a supply asset which could be used to meet the demands for the war in the Pacific. The ASF necessarily depended for information on the quantities and availability of these supplies upon the oversea commanders. In addition to the equipment actually in the hands of troops, equipment was located in base, intermediate, and advance depots of the Communications Zone as well as in depots of the various field units. In March 1945, the ASF requested supply officers overseas to indicate the proportion of the total equipment received which might be used in the Pacific. In general, the replies as of 20 April indicated that about 70 percent of all major items of equipment could be counted as a supply resource to meet the demands of a one-front war. The proportion varied for different categories of equipment; for small arms it was estimated that 75 percent of the quantities in Europe could be used in the Pacific; for light and medium artillery, 80 percent; for heavy artillery, 85 percent; for fire control instruments, 60 percent. The appropriate quantities were then included in the supply computations of the Army Service Forces when estimating procurement for the remainder of the calendar year 1945 and for all of the calendar year 1946. In May, an improved reporting system was begun to provide more detailed information on oversea stocks.

In the last quarter of the fiscal year 1944, the Army Service Forces began an improved method of balancing supply to meet demand—called the Supply Control System. In brief, this involved assembling on a single form complete data about past issue experience, present demands and inventory, and future requirements. For the most important items procured by the Army Service Forces these data were submitted by the technical services to ASF Headquarters for review. By the end of the year 1,887 major items, amounting to about 75

percent of the total dollar volume of all ASF procurement, had thus been brought under the Supply Control System. For the remaining 25 percent, involving nearly a million items, the technical services made their own computations along similar lines. The great advantage in this system was the ready comparison permitted between actual distribution and previously estimated factors. Analysis of the data indicated whether the quantities to be delivered would exceed expected demands or be insufficient to meet them.

The Army Supply Program computed on 1 October 1944 was based in large part upon the data contained in the supply control records. In January 1945 the Army Supply Program as such was superseded by the supply control reports. The former section I of the Army Supply Program, Ground Equipment, was replaced by the Ground Procurement Program, Section 22-G of the Monthly Progress Report, which listed the approved procurement of the principal items as established each month in section 20 of the Monthly Progress Report. Section II-C of the Army Supply Program, Air Procurement Program, was replaced by section 22-A of the Monthly Progress Report, summarizing the authorized ASF procurement of items peculiar to the Air Forces. Section III of the Army Supply Program on International Aid was superseded by section 23-L of the Monthly Progress Report, summarizing the procurement plans for lend-lease operations. Section VI of the Army Supply Program, Civilian Supply and Equipment, was replaced by section 23-C of the Monthly Progress Report. In this way the procurement program of the ASF was revised to reflect the latest changes in supply position.

A steady effort was made throughout the year to bring more and more of the major items of procurement under the supply control system. In August 1944, for all technical services there were 950 procurement items reported on the supply control form and reviewed monthly by ASF Headquarters. An additional 306 items were reported on a quarterly basis. By January 1945, 1,640 items were reported on the supply control form on a monthly basis, and the quarterly computations were dropped. By June there were 1,887 items reported in section 20 of the Monthly Progress Report. Additions to and deletions from the principal item list were made frequently, depending upon the changing importance of various pieces of equipment and other supplies.

The supply computations for principal items as prepared by chiefs of technical services were published in preliminary form for critical review. This review was made at meetings attended by representatives from the technical services and from the requirements, production, maintenance, planning, and distribution staff divisions of the ASF. At these meetings adjustments were made on the basis of the most recent information affecting anticipated demands and current deliveries. After the meeting the approved computations together with revised procurement objective and programmed procurement figures were published in final form as section 20 of the Monthly Progress Report.

The success of the supply control system depended in large part upon accurate inventory records in the United States. If stock record accounts of depots did not accurately reflect supplies on hand, over- or under-procurement might well result. A major difficulty was

encountered during the year in the failure of depots to record promptly returns to stock from posts, camps, and stations in the United States and the failure to record on their inventories property awaiting repair and return to stock. Both of these represented important supply assets. The improvements in these phases of supply operations will be mentioned later. In large part the impetus for these changes came from the adoption of the supply control system.

In computing demand as of 1 October 1944, a number of important changes in supply procedures were introduced. The use of the supply control system has been mentioned. In addition, estimated demands were based upon actual and projected troop units in each theater, thus permitting a more accurate determination of replacement requirements, since the rate of consumption varied from theater to theater. Inventory levels for depots in the United States were reduced from 90 days to 60 days for items of vital combat importance, and to 45 days for all other items. The strategic reserve was reduced from 25 divisions and 27 air groups to 10 divisions and no air groups.

After the computation of requirements for principal items had been brought under careful review, the technical services were directed in April 1945 to begin an immediate critical scrutiny of supply position and programmed procurement for the so-called secondary items. Wherever it appeared that existing supplies would more than meet the requirements through 1946, the excess was to be immediately reported for disposal. In other cases programmed procurement was to be adjusted to meet the requirements for active war only in the Pacific. In the 2 months of May and June 1945, the technical services reviewed the supply status of more than 600,000 secondary items procured by them. As a result, procurement amounting to more than 491 million dollars for 1945 was canceled and another 334 million dollars worth of property was declared surplus.

A reduction in procurement of secondary items also came about from a modification in spare parts policy in November 1944. Previously, spare parts had been purchased concurrently with all vehicles on the basis of estimated replacement needs for the first year of operation. This policy was curtailed in favor of basing procurement upon actual issue experience for individual parts as shown in supply control data. Additional data on spare parts usage overseas were obtained from teams of officers and enlisted men sent to the European and Mediterranean Theaters. The information obtained from these teams provided a basis for further careful review of all spare parts procurement. Excess spare parts stocks which had accumulated were returned to the manufacturer for use in equipment being currently produced for the War Department, and production reserves of spare parts were limited to those items no longer being manufactured. By the end of the year lists of basic allowances of spare parts had been completed for all major items of ASF equipment. More than 3,500 supply catalogs had been published covering 90 percent of the major items concerned.

Another major phase of the program to control procurement of secondary items was the establishment of common stock numbers for the same or similar items. Since automobiles and other equipment were made for the War Department by different manufacturers, the item identification at the beginning of the war followed that of the

individual manufacturer. The result was that many similar or even interchangeable parts were carried in supply catalogs under different stock numbers. The effort to identify like items and provide a single stock number was intensified during the year. As a result, there was a 30 percent reduction in the types of spare parts and other items procured by ASF. The progress in each technical service is shown in the accompanying table:

Technical service	Categories of articles reviewed	Total number of articles reviewed	Total number of articles eliminated	Percentage eliminated
Engineers.....	Common supplies and spare parts.....	132,000	32,500	24.6
Ordnance.....	Common supplies, spare parts, equipment and tools.	156,000	69,000	44.2
Quartermaster....	Common supplies, spare parts, clothing and equipage.	71,000	9,000	12.7
Signal.....	Common supplies, spare parts, equipment and tools.	161,000	45,000	28.0
		520,000	155,500	29.9

The Army Service Forces actively supported the establishment in April 1945, of the U. S. Standard Commodity Catalog Board to function under the Bureau of the Budget. This board was to undertake the formation of a uniform item identification and catalog system for use by all Federal agencies in their procurement and storage operations.

Chapter 11. THE PROCUREMENT RECORD

In the fiscal year ending 30 June 1945, the Army Service Forces obtained some 23.1 billion dollars worth of equipment and supplies from American industry. This was the largest output of the war, exceeding 1944 deliveries of 21.9 billion dollars by nearly 6 percent.* Deliveries to the Army Service Forces in the fiscal years 1943, 1944, and 1945 are shown in the accompanying chart. In the 6 months after Pearl Harbor, from January through June 1942, total deliveries amounted to 4.3 billion dollars. For the entire fiscal year 1942, total deliveries came to about 6 billion dollars. Thus the great increase in productive output came in 1943, when deliveries were three times those of the preceding year. Deliveries in 1944 were nearly 13 percent larger than those in 1943, and 1945, as already noted, was about 6 percent larger yet. After 30 June 1945 deliveries were expected to decline steadily.

At the end of the fiscal year 1944 there was much concern in the Army Service Forces about 7 months of steady decline in procurement deliveries. This downward trend was halted in August 1944. Thereafter, deliveries began to mount, until an all-time monthly record of 2.1 billion dollars worth of supplies was realized in March 1945. April was only slightly less. Then deliveries began to decline as desired in May, reaching a level of 1.8 billion dollars in June.

Of the 23.1 billion dollar total deliveries in 1945, the Ordnance Department accounted for 50 percent, and the Quartermaster Corps for nearly 30 percent. Deliveries to the Corps of Engineers amounted to 1.9 billion dollars, and those to the Signal Corps 1.3 billion dollars. Transportation Corps deliveries were 789 million dollars in the fiscal year, Chemical Warfare Service 708 million dollars, and Medical Department 259 million dollars.

Although Ordnance Department deliveries were 50 percent of the 1945 total when measured by dollar value, 1945 Ordnance procurement was less than 1944. Decreases occurred in small arms ammunition, light artillery, self-propelled weapons, miscellaneous combat vehicles, light and medium trucks, and miscellaneous vehicles. Deliveries of heavy field artillery ammunition in 1945 were $3\frac{1}{2}$ times 1944 deliveries, heavy field artillery deliveries were almost double, and truck ($2\frac{1}{2}$ tons and over) deliveries were 18 percent greater.

Signal Corps, Transportation Corps, and Medical Department deliveries were also less in 1945 than in 1944. Engineer Corps deliveries were nearly 17 percent larger, while Quartermaster deliveries were 30 percent larger. Deliveries to the Chemical Warfare Service

* Procurement deliveries for 1944 were shown in last year's report as 23.5 billion dollars. In 1945, Signal Corps procurement of Army Air Forces communications equipment was transferred to the AAF, as mentioned later. This program amounted to more than 1 billion dollars. In order to compare ASF procurement performance, the deliveries of communications equipment for the AAF were excluded from all data, including those for the period before the actual transfer. Later revisions in procurement data accounted for the additional reduction.

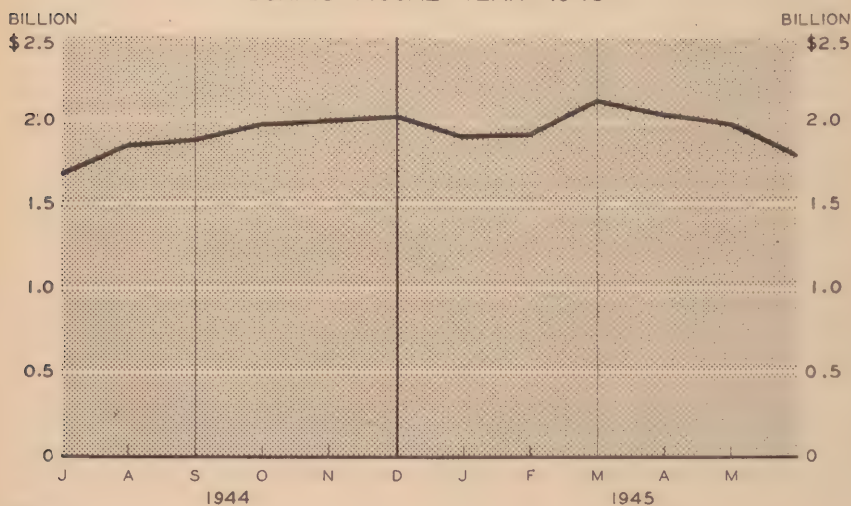
ASF DELIVERIES BY FISCAL YEAR

THOUSANDS OF DOLLARS



ASF MONTHLY PROCUREMENT DELIVERIES

DURING FISCAL YEAR 1945



had about the same value in both years. The record on deliveries by major programs for the 2 years 1944 and 1945 are shown in the accompanying table.

Dollar values gave only a general indication of procurement trends. Concealed within these totals were the many different, specific items

Procurement deliveries for fiscal years 1944 and 1945

[Millions of dollars]

	Fiscal year	
	1944	1945
All services.....	\$21,969	\$23,131
<i>Ordnance</i>	11,900	11,589
Small arms matériel.....	982	711
Small arms ammunition.....	1,174	624
Bombs, grenades, mines, etc.....	949	1,680
Heavy field artillery ammunition.....	205	693
Ammunition other than heavy field.....	1,936	2,152
Heavy field artillery.....	128	229
Artillery excluding heavy field.....	1,047	616
Tanks.....	1,461	1,626
Self-propelled weapons.....	745	318
Miscellaneous combat vehicles.....	684	318
Heavy-heavy trucks.....	476	597
Light-heavy trucks.....	857	984
Light and medium trucks.....	825	660
Other vehicles and miscellaneous.....	431	381
<i>Signal</i>	1,553	1,351
Ground radar equipment.....	314	105
Special ground radio equipment.....	27	38
Ground and vehicle equipment.....	440	318
Telephone and telegraph.....	175	178
Wire and cable.....	150	246
Miscellaneous.....	447	466
<i>Engineers</i>	1,651	1,931
Boats and bridging equipment.....	95	166
Construction equipment.....	563	605
General equipment.....	775	837
Tractors, crawler type.....	218	323
<i>Chemical Warfare</i>	706	708
Ammunition.....	140	203
Bombs.....	329	280
Protective matériel.....	130	106
Service equipment.....	21	7
Weapons.....	9	12
Miscellaneous.....	77	91
<i>Medical</i>	300	259
Drugs, chemicals, biological.....	112	115
Other medical supplies and equipment.....	188	144
<i>Quartermaster</i>	5,029	6,504
Clothing.....	1,137	1,305
Equipage.....	419	642
General supplies.....	488	539
Service and warehouse equipment.....	170	135
Subsistence.....	2,815	3,883
<i>Transportation</i>	830	789
Self-propelled vessels.....	291	247
Nonpropelled vessels.....	95	47
Other marine equipment.....	153	203
Materials handling equipment.....	16	13
Railway cars.....	92	38
Locomotives and locomotive cranes.....	147	206
Other rail equipment.....	36	35

ASF MONTHLY PROCUREMENT DELIVERIES

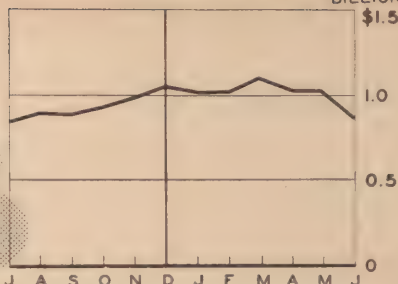
FISCAL YEAR
1945

BY SERVICES

ORDNANCE

BILLION

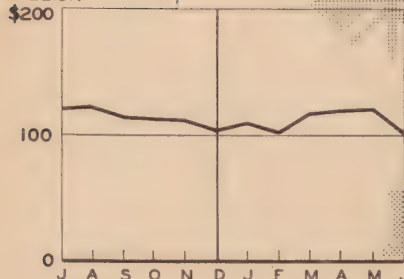
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SIGNAL

MILLION

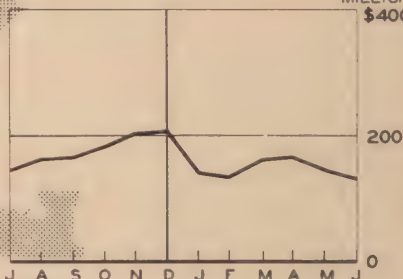
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ENGINEERS

MILLION

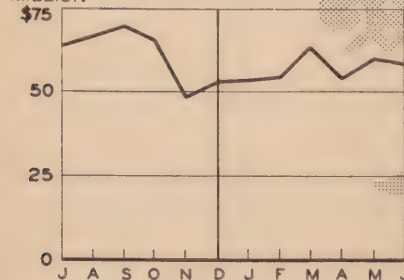
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CHEMICAL WARFARE

MILLION

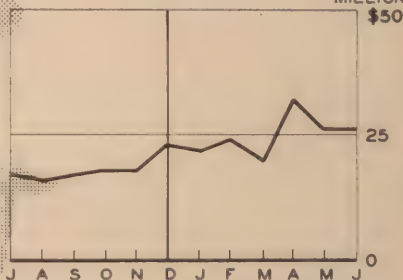
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MEDICAL

MILLION

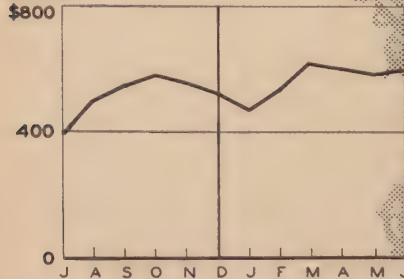
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QUARTERMASTER

MILLION

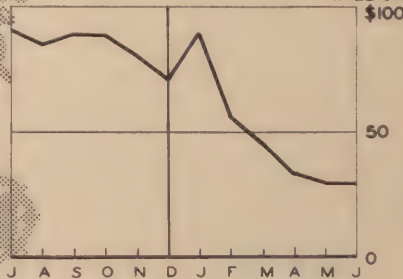
\$800



TRANSPORTATION

MILLION

\$100



1944

1945

1944

1945

required by the Army. Deliveries in 1945 included 1,380,000 carbines, 1,000,000 Garand rifles, 83,000 Browning automatic rifles, 366,000 Thompson submachine guns, 566,000 caliber .50 machine guns, 252,000 small rocket launchers (Bazookas), 193,000 artillery rocket launchers, 48,000 mortars, 18,200 tank guns and howitzers, 3,000 heavy artillery pieces of 155-mm and above, 4,400 light tanks, 16,260 medium tanks, 170,000 jeeps, and 239,000 2½-ton trucks. Other deliveries in 1945 included such items as 23,000 flame throwers, 1,570 4.2-inch mortars, 923,000 floating smoke pots, 5 million gas masks, 15,690 new railway cars, 2,570 new locomotives, 2,300 major items of marine equipment, 185 million square feet of steel landing mat, 5.4 billion board feet of lumber, 31,400 crawler tractors, 7,000 cranes and shovels, 7,000 miles of invasion pipe lines, 915,000 telephones, 440,000 radio sets, 2,800,000 miles of wire, 142 million pairs of wool socks, 20 million pairs of combat boots, 83 million pieces of mess gear, 22 million pounds and 6 million gallons of insecticide containing DDT. These were just some of the items with which this war was fought.

Subsistence

Food procurement by the Army became more difficult during 1945. As in the past, The Quartermaster General purchased over 80 percent of the subsistence used by the Navy, the Coast Guard, the Marine Corps, the Veterans Administration, and the War Shipping Administration. In addition, food was purchased for prisoners of war, for civilians in liberated areas, for sale by Army Exchanges to troops overseas, and for resale at commissaries. Subsistence purchases by the Army came to about 3.9 billion dollars. The Army was adequately fed throughout the year.

The procurement of the Army's food supply required the closest cooperation between The Quartermaster General, the War Food Administration, and the Office of Price Administration. The seasonal procurement programs which were begun in 1943 were further extended during the fiscal year 1945. These programs included butter, cheese, canned poultry, fresh meats, fresh potatoes, onions, apples, and eggs. In order to provide adequate supplies of perishable subsistence, additional set-aside orders, shipping permits, and other directives were issued by the War Food Administration. In 1945 set-aside orders were used in the procurement of beef, pork, veal, lamb, poultry, lard, butter, cheddar cheese, potatoes, and apples. Set-aside orders were also used in obtaining many items of nonperishable subsistence.

The large demands for flour were met as a result of an informal agreement with the milling industry to supply 600,000,000 pounds of flour a month as required. This arrangement prevented the curtailment of civilian supplies in the United States and at the same time gave the Army a steady flow of flour with which to meet its increased requirements. Because of shortages in box cars for transporting large quantities of wheat and flour to eastern seaports, lake shipping facilities were utilized in great measure.

Allocations of food for the Army continued to be made by the Requirements and Allocations Committee of the War Food Administration. The oversea shipments of perishable subsistence increased

by approximately 52 percent during the year and amounted to more than 1.5 billion pounds. The issue of meat, fish, and poultry was limited to 850 pounds per thousand rations on a monthly average after VE-Day. Allowances of nonperishable foods were similarly reduced and in most instances substitutes were used for scarce foods. Both perishable and nonperishable foods were allocated so that each overseas theater would receive its fair proportion of available supplies. These adjustments in no instances reduced the ration to levels below those required for ample nutrition.

The computation of food requirements and menu planning in the Army reflected the serious food shortages in the United States. All overseas theaters were required to submit to The Quartermaster General ration scales for American troops, liberated civilian populations, prisoners of war, laborers, and other groups. These ration scales were reviewed and reduced in the light of critical food supply. Reductions in scarce items were offset by increases in more plentiful items. New menus for prisoners of war were provided both in the United States and overseas which reduced the quantity of critical foods used in their feeding. Menus were also rewritten for use on hospital ships, making greater use of left-over and other foods.

In cooperation with the Committee on Food Composition of the National Research Council, The Quartermaster General made studies of the nutritive value of all new food items developed for the Army. Data were also compiled on the losses in the nutritive value of foods stored under different conditions for periods up to 12 months. A joint study was also made of the nutritive losses resulting from large-scale cooking operations. Previous studies of emergency rations for the feeding of European civilians were continued; similar studies were made for the feeding of peoples in the Pacific areas.

The volume of purchases of all types of subsistence increased during the fiscal year. At one time the Quartermaster Corps procured special rations for combat use at the rate of 40 million a month.

Food Service

The food service program begun in the United States in the fiscal year 1944 was continued in 1945 to improve further the Army standards of feeding and to eliminate the waste of edible foodstuffs. Particular care was given to insuring that vital food supplies critically needed by the civilian population were not wasted by the Army. Food service at all installations and particularly at ports of embarkation, staging areas, personnel centers, and redistribution stations was improved. Soldiers returning from overseas and routed to redistribution stations for reassignment received food service equal to the finest resort-hotel standards. Food surveys were conducted at nine general hospitals in cooperation with The Surgeon General to improve methods of procurement, storage, and preparation of food. The food-service programs extended to certain overseas areas such as the Panama Canal Department and the Antilles Department. The Transportation Corps and the War Shipping Administration were helped in improving feeding on Army transports and merchant vessels.

Five service commands in 1945 established food survey teams to maintain more accurate records on the consumption of food and the elimination of waste. This action proved so successful that other food

survey teams were trained for use in all service commands. Analysis of surveys on factors of food consumption revealed the need for greater care in the assignment of personnel to messing activities, the better utilization of schools for bakers and cooks, improved cooking practices, the avoidance of frequent serving of the same food item, improvement in mess records, and elimination of excessive drawing of rations.

The Food Service Branch in the Office of The Quartermaster General supervised the teaching of 11 courses in various schools for bakers and cooks throughout the country. More than 2,200 officers and 34,000 enlisted men graduated from these schools during the year. Fourteen conference bulletins were developed during the year, four dealing with mess supervision and ten with dehydrated foods. Other instructional materials were provided for improving the quality of mess operation throughout the Army.

Sixteen leading executives of the refrigerated warehouse industry were recruited during the year to assist in a program for the better utilization of refrigerated storage space. Instructions on the utilization of such space were prepared and both civilians and officers were trained in new procedures for the storage and issue of perishable subsistence. At the end of the year, The Quartermaster General supervised 225 central meat-cutting plants, while 27 more were under construction. Every effort was made to utilize to the full, existing baking facilities without the construction of new ones. There were 100 central pastry bakeries authorized in the United States during the fiscal year. Plans for oversea bakeries were completed with the assistance of the Chief of Engineers and a record system established to insure the fullest utilization of baking equipment.

Fuels and Lubricants

In the fiscal year 1945 the Fuels and Lubricants Division in the Office of The Quartermaster General purchased more than 180 million dollars worth of petroleum products for oversea shipment. This included nearly 1.4 billion gallons of gasoline and fuel oil, 123 million gallons of lubricants, and over 51 million pounds of grease. There were approximately 4,000 different petroleum equipment container and laboratory items purchased at a cost of nearly 30 million dollars.

Within the United States, gasoline, oil, and lubricants were purchased by military installations on Treasury procurement schedules and Quartermaster contracts. During the year purchases of petroleum products were reduced by more than 2 million dollars because of efficient redistribution of excess stocks.

From November 1944 through March 1945, a total of 590,000 gallons of 80-octane gasoline, 42 million gallons of engine oil, 26 million pounds of grease, and 83 million gallons of other lubricating oils were purchased and shipped to the European and Mediterranean Theaters of Operation. This volume equaled the total procurement of these products in the preceding 12 months. At the same time, a total of 7.5 million 5-gallon "blitz" cans were shipped to northern Europe after filling at commercial plants. On an average one fully loaded Liberty ship a week hauled cans of gasoline and oil for the war against Germany.

The Quartermaster General spent some 19 million dollars for supplies to be used in the oversea manufacture of can and drum plants.

Some 135,000 tons of sheet steel requiring 100 ships to transport were sent to various oversea theaters. These plants were located in Europe, the Middle East, the Persian Gulf, and India. The output of these plants was sufficient to package about 19 million gallons of products a month.

Coal purchases for Army use in the United States were about 10 percent less than consumption during the year because of the utilization of existing inventories. The Solid Fuels Administration for War continued an 80 percent limitation on distribution of coal for space heating which required most careful conservation measures at all posts. Altogether Army coal and coke procurement came to about 8.3 million tons.

The purchase of anthracite and bituminous coal and coke for oversea shipment during the fiscal year amounted to over 1 million tons. The shipment of coal overseas was subject to constant modification with changing policies on civilian supply and changing operational plans. During 1945 it was possible to obtain from sources within Europe some 36 million metric tons of coal which otherwise might have been required from the United States to meet military and essential civilian needs. Technical assistance was provided oversea theaters in exploiting all available indigenous sources of coal. Some 53 officers with experience in the coal industry were sent overseas to work on coal problems. This led to better production than would otherwise have been possible. Other personnel was to be furnished the Pacific theater to work on the same problem.

During the year reporting procedures on the consumption of petroleum products both in the United States and overseas were improved. These reports became the basis for determining petroleum requirements and eliminated much of the work which had previously been required in computing procurement needs.

A list of all liquid fuels and lubricants used by Army vehicles including standard nomenclature, general description, use, grade, specification number, and container size was published during the year. Section I, War Department Circular 129, 1945, made mandatory the use of only standard products in Army equipment except aircraft. New instructions were also issued covering the standards for fuels and lubricants to be purchased for oversea shipment. Container and loading specifications were included. Long-time storage of gasoline in zone of interior was eliminated during the year.

Petroleum inspection activities were jointly handled with the Navy Department so that available Navy inspectors at 38 out of a total of 156 inspection points examined petroleum products purchased by the War Department. The other inspection points were covered by civilian inspection agencies.

The responsibility for the development and design, procurement, and storage of petroleum laboratory equipment was transferred from the Corps of Engineers to the Quartermaster Corps. A Joint Services Petroleum Laboratory Coordinating Committee was established during the year to coordinate the activities and locations of petroleum laboratories by the Army, Navy, and Air Forces. The committee was expected to reduce the number of laboratories and to bring about more efficient distribution of technical information.

The Canol project for the production of oil in Northwest Canada

was closed on 8 March 1945. The petroleum products distribution system from Skagway to White Horse and then south to Watson Lake and north to Fairbanks was continued in operation. In the months before its stoppage, the Canol project produced from 4,500 barrels of crude oil per day at Norman Wells. This was transported through 577 miles of pipe line to the refinery at White Horse. In the peak operating month this refinery processed an average of 4,180 barrels of crude oil a day, producing 213 barrels of aviation gasoline, 2,033 barrels of motor gasoline, and 1,319 barrels of Diesel fuel.

Transfer of Signal Procurement to Army Air Forces

In August 1944, steps were taken in accordance with instructions from the Chief of Staff to transfer responsibility for all research, procurement, storage, and issue of communication and radar equipment peculiar to the Army Air Forces to that agency from the Signal Corps. Section I, War Department Circular 429, 1944, set 1 April 1945 as the effective date for the transfer of functions, personnel, and facilities involved.

The Aircraft Signal Agency at Wright Field was turned over to the Air Forces. The Signal Corps was directed to complete development contracts then in effect, and no new production contracts were to be made by the Air Forces until after the defeat of Germany except for experimental purposes. The Signal Corps continued to handle all contract terminations on contracts made by it. The Air Forces took over existing agreements with the Navy for common procurement. The personnel of the Dayton Signal Corps Procurement District was turned over to the Air Forces as rapidly as existing contracts were completed. The Signal Corps depot at Dayton remained under control of the Signal Corps until the end of the war with Germany. Projects for development of ground radar equipment peculiar to the Air Forces were transferred to the Air Forces.

The phrase "aeronautical matériel or equipment peculiar to the Army Air Forces" was construed to include communications, radio, radar, countermeasures, identification, and other electronic equipment used exclusively or preponderantly in aircraft. Communications equipment used on the ground exclusively for the detection or identification, location, or operation of aircraft of the Army Air Forces, and guided missiles launched from aircraft or similar to aircraft became a part of the procurement program of the Army Air Forces. All other types of communications equipment continued to be procured by the Signal Corps. Thus radar and other electronic equipment used on the ground for identifying aircraft for the purpose of early warning or for the direction of antiaircraft fire against hostile planes was procured by the Signal Corps. Guided missiles which depended for sustenance primarily on the momentum of the missile rather than on the lift of aerodynamic forces remained with the Signal Corps. As of 1 April 1945 a total of 600 officers, 390 enlisted men, and 8,245 civilian employees of the Signal Corps were transferred to the Army Air Forces. This virtually completed the shift.

In the 9 months from July 1944 through March 1945, Signal Corps deliveries for the Army Air Forces amounted to 890 million dollars. This indicates the scale of the procurement operations transferred to the Army Air Forces.

Chapter 12. PRODUCTION PROBLEMS

At the beginning of 1945 the production effort of the ASF was concentrated upon preventing further declines in deliveries and upon reaching the schedules needed to meet supply demands. The increase in production which followed resulted from several different steps. For one thing, representatives of ASF procurement offices and of labor supply activities were brought together in a series of meetings to discuss the steps to be taken, in conjunction with the War Production Board and the War Manpower Commission, to increase deliveries. Some 1,000 soldiers were released to work in foundries, 500 were released to work on tire production, 500 to work on maintenance of tire plants, and 2,500 men to work on production of 105-mm shells. The Under Secretary of War, the Secretary of the Navy, the Chairman of the War Production Board, and the Chairman of the War Manpower Commission issued a joint letter to regional representatives of all these organizations outlining the procedures to be followed in expediting war production by channeling labor and materials from plants producing nonessential items into plants producing war materials.

Special teams of ASF officers were formed to assist plants in obtaining labor required to meet urgent programs such as tires, loading plants, foundries, and cotton duck. Finally, a number of conferences were held with individual groups of manufacturers producing urgently needed items to assist them in meeting their production schedules.

In order to focus expediting efforts on those items most urgently required, a list of items, components, and programs was compiled and classified as "critical programs." This list was furnished to the WPB and WMC with monthly revisions and was incorporated in Production Urgency Circulars issued to the field representatives of the ASF, WPB, and WMC. These "critical programs" were granted top priority for construction materials, plant equipment, raw materials, components, and labor. The original ASF list of critical programs included: heavy and medium artillery ammunition, aircraft bombs, explosives, heavy artillery weapons and spare cannon, airborne radar equipment, heavy trucks, tanks and tank destroyers, construction equipment, tires, and tentage duck.

Special methods of expediting production were used on these "critical programs." Each program and each plant involved in the program were treated as special problems. Periodic meetings were held between ASF production representatives and high officials of the WPB, WMC, and other interested agencies to determine the particular reason for the delay in production at any one plant and to devise means for eliminating these delays. The attention of local government representatives was concentrated on the "critical programs" by the establishment of Production Urgency Committees throughout the country and by the issuance of national production urgency lists.

For example, when in November 1944 the planned maximum rate of production of the 105-mm howitzer shell M1 was increased from

approximately 4.5 million shells to 7.5 million shells per month, a number of steps were taken. The necessary expansions of existing facilities and the necessary construction of new facilities were at once determined for forging and machining shells; for manufacturing rotating bands, cartridge cases and fuses; for producing TNT and smokeless powder; and for producing the required basic raw materials. The necessary approvals for expansion or construction were expedited and orders for the required machine tools placed. Since manufacture of the required machine tools conflicted with orders placed by other agencies, the assignment of overriding directives and the freezing of machine tool schedules were approved by the WPB. Machine tool orders were pooled and as individual tools were completed they were allocated among the plants so that maximum production could be obtained. The labor requirements of each plant, month by month, were obtained and these plants were given first priority on labor referrals. In addition, men were furloughed from the Army to work in these plants. Adequate provisions for housing and transportation were made where necessary. WPB allotments to the Army of the basic raw materials required (steel, copper, toluene, etc.) were increased. Constant checks were made to insure complete coordination of the entire program. A mission was even sent to the liberated areas of Europe which succeeded in locating 200 valuable lathes and other tools which were shipped back to the United States.

The Ordnance Department also perfected and put into operation a new method of shell loading. Two machines, a multiple volumetric shell loader and a multiple core melter, eliminated tedious hand operations and put shell loading on a production line basis. Nearly 5 million man-hours were thus saved in the calendar year 1944.

By such methods substantial increases in production of critical items were obtained, as shown in accompanying charts.

Expansion of Production Facilities

Emphasis on the use of existing available industrial facilities in preference to expansion of facilities was continued through the fiscal year 1945. Any plant expansions costing over \$100,000, or requiring financing from the appropriation title "Expediting Production," had to be approved by the Director, Production Division. All construction costing over \$1,000 at Army Service Forces Class IV installations also required approval by the Director, Production Division, ASF. As a further check on facility expansions, all projects involving over \$100,000 had to be approved by the Construction Requirements Committee, War Production Board. In anticipation of the end of the war in Germany, instructions were issued to the technical services in April 1945, stating that no facility project would be undertaken which was not required to meet production needs for the war with Japan.

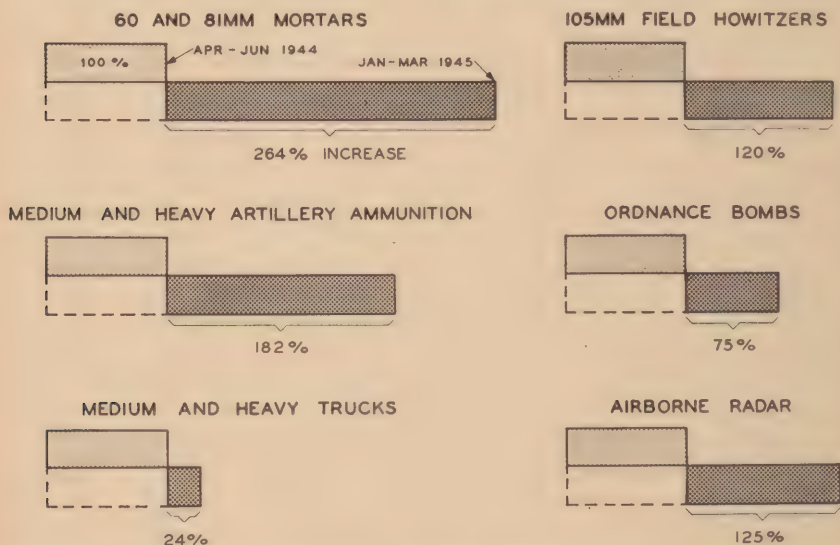
During the fiscal year 1945 a total of 780 industrial facility expansions amounting to \$870,000,000 were approved by the Army Service Forces; this compared with 447 projects amounting to \$822,900,000 in the fiscal year 1944. However, in April and May 1945, 105 uncompleted facility expansions with a total authorized cost of \$260,000,000 were canceled, in whole or in part, as a result of reductions in the Army Supply Program which became effective with the

imminent defeat of Germany. Continuing study was made to eliminate other uncompleted projects which might be no longer needed to meet production requirements.

In addition to the Army Service Forces facility program, a total of 165 Army Air Forces projects amounting to \$84,500,000 were processed through the Production Division for the allocation of "Expediting Production Funds" by the Under Secretary of War.

As in 1944, the bulk of the facility projects authorized in 1945 were for the addition of machine tools and equipment to existing plants, with very few proposals involving the construction of new plants or any substantial amount of new floor space. Since the be-

INCREASE IN PRODUCTION OF SELECTED ITEMS



ginning of 1942 authorizations have been given for Defense Plant Corporation pool orders aggregating \$1,872,000,000 for machine tools and related equipment. At the start of 1945, 186 active pool orders remained, covering uncompleted equipment valued at \$26,000,000. Combined activities of ASF, Navy, War Production Board, and Defense Plant Corporation during the year resulted in reduction of the Government's liability to approximately \$8,500,000.

In July 1944, there remained 24 outstanding cutting-tool pool orders aggregating \$34,500,000 from an original 33 orders totaling \$78,144,000. Action taken during the year resulted in termination of all outstanding orders except one, with the subsequent reduction in the Government's liability to an estimated \$10,000. During the year, 96 gauge pool orders aggregating \$15,962,000 were terminated at no cost to the Government.

Tax Amortization

The Army Service Forces continued to review applications for necessity certificates on privately financed facilities filed with the

War Production Board. During the fiscal year ending 30 June 1945, 657 were received. The total value of the cases on the basis of their estimated cost on the date of application was \$54,237,181. By the end of the year, all but 11 of these applications had been reported back to the WPB for final action.

By Executive Order 9486, dated 30 September 1944, regulations were promulgated governing the issuance of "Non-Necessity Certificates" under Section 124 (d) of the Internal Revenue Code. These certificates were issued when it was reported to the certifying authority that emergency facilities, for which a necessity certificate had been made, were no longer necessary in the interest of national defense. During the year, 286 applications were received under this provision with a total estimated dollar value of \$49,074,392. By the end of the year, all but 18 of these applications had been acted on by the ASF.

Production Urgency Committee Actions

On 1 July 1944, the War Manpower Commission announced a program to extend manpower priorities committees to all Group I and II labor market areas. In order that ASF representatives of existing and newly established committees might be informed about their responsibilities, the Production Division and the Industrial Personnel Division arranged a series of field training conferences.

In the early fall of 1944, the War Production Board relaxed controls on commercial production to permit the manufacture of certain civilian goods on approval of labor requirements by local production urgency committees and the War Manpower Commission. An appeal subcommittee of the WPB coordinating Area Production Urgency Committee in Washington was established to review appeals from decisions of chairmen of local production urgency committees and local WMC representatives.

War production programs were accelerated in October 1944, and it became evident that a clear-cut policy on resumption of civilian production was essential if these programs were to be protected. A joint policy statement on this question was issued on 1 December 1944, signed by the Chairman of the WPB and WMC, the Secretary of the Navy, and the Under Secretary of War. Revised instructions were issued to ASF representatives to conform with the new regulations of the War Production Board requiring checks on programmed civilian items and prohibiting "spot" authorizations in Groups I and II labor market areas.

With the cooperation of the ASF, the production urgency and manpower priority ratings and procedures were revised by WPB and WMC in November 1944.

On 11 May 1945, the War Manpower Commission made manpower controls optional in Groups III and IV labor market areas, and announced that controls would be mandatory in Group I areas only after 1 July 1945. On 16 May, WPB issued instructions which provided that certain applications from small concerns for authority to produce, and certain applications for small construction, would no longer be subject to approval of PUC's serving Groups I and II labor market areas. The instructions also eliminated all production urgency controls in Groups III and IV labor market areas and placed the committee in standby.

In cooperation with the WPB, the WMC, and other interested agencies, a program was developed to solve an acute labor shortage in foundries and forge shops producing important components for "must" end items. The principal difficulties experienced by the Army Service Forces were in the procurement of tank armor and malleable castings for axle housings, hubs and wheels; and in gray iron castings for cylinder blocks and heads, transfer and transmission cases and wheels. The first step to relieve the forge and foundry situation was the expansion and mechanization of facilities, and the second was to increase the labor supply through a vigorous labor recruitment program.

Controlled Materials and Preference Ratings

The Controlled Materials Plan and the preference rating system remained intact throughout the fiscal year, with only minor changes made to tighten controls in certain categories.

Preference ratings and directives were used extensively to expedite urgent construction programs. The WPB issued two and a half times as many emergency ratings and directives as were issued in the previous year. Frequent requests were made to the WPB for special assistance in obtaining deliveries of brass mill and copper wire mill products in advance of the time automatically scheduled by CMP procedure. Shortages in certain types of sheet steel, tubing, alloys, and forging bars required the use of directives to schedule military items at the expense of nonmilitary items which had previously held mill space.

Army requirements for controlled materials reached their highest levels during the year. Because of cut-backs in the programs of other agencies and the reduction of allotments to nonmilitary claimants to an all-time low, the allotments to the Army were adequate to meet its programs. With the defeat of Germany, there was a substantial decline in Army requirements for CMP materials. It was not anticipated that the requirements for the remainder of the war would equal those of the past year. The plan was highly successful in achieving its purpose with a minimum of administrative difficulty.

Following the defeat of Germany, the WPB revised its regulations to provide for "open ending" the Controlled Materials Plan for brass mill products after 1 June and all other products after 1 July 1945. This would permit the mills to accept unrated orders to the extent of their capacity after all CMP allotted orders had been filled. It was anticipated that CMP would be abolished by 1 January 1946.

The major production expediting problem in aluminum involved extrusions for the M-4 floating bridge program. Because of the short delivery time specified by the contracts, and because of increasing requirements for aircraft, it was necessary to direct production of all aluminum products for the bridge program in the first quarter of 1945 and all aluminum rolled and extruded shapes in the second quarter of 1945. The bridge program was superimposed upon a generally increased demand for aluminum products starting in the first quarter of 1945.

Except for a brief period during the fourth calendar quarter of 1944, requirements for ammunition brass categories (strip, rod, and tube) rose steadily throughout the period and then fell abruptly at the end of the fiscal year. Actual shortages were minimized and maximum

production insured by continued WPB scheduling and direction of brass mill production of ammunition brass.

Production of the required mileage of Signal Corps Communication wire was a major problem for the first 8 months of the fiscal year 1945. Procurement objectives were repeatedly raised during the year. These goals were never met because expansion of wire producing facilities and the availability of component materials, notably high carbon steel wire and cotton yarn, could not keep pace with the accelerated demand. By constant effort production was raised from 116,-780 miles of field wire in July 1944, to 263,000 miles a month early in 1945.

During the fiscal year, the steel problem was complicated by changes chiefly in the ammunition program and to a lesser degree in truck and tank programs. During the fourth quarter 1944 program cut-backs made steel supply easier, but this situation changed in December. Thereafter, the continually increasing shell steel demands were a controlling factor in the supply of many steel products. The demand for shell steel resulted in cut-backs in many nonmilitary products requiring quality steel, such as carbon and alloy bars and billets, rails, structural shapes, and tube rounds. Deliveries of shell steel to War Department contractors rose from 186,000 net tons in July 1944, to 390,000 in March and April 1945.

Although VE-day brought cuts in some of the Army's heavy sheet-consuming programs, these were largely offset by mounting Pacific requirements for incendiary bombs, shell containers, cartridge storage cases, and prefabricated housing. So substantial were these increases that orders for sheet steel for the Army were expected to fall only 130,000 tons, or less than 12 percent below the second quarter level, in contrast to the reduction of some 47 percent for Army steel demands as a whole. Moreover, the cuts occurred primarily in those end items (landing mats, and to some extent heavy trucks) which used materials already in adequate supply, whereas the increases were bunched in the tightest grades—cold rolled sheets 18 gauge and over, and hot-rolled pickled sheets. For these grades, the projected third quarter Army load for sheets and strip appeared to be more burdensome even than that indicated earlier for a two-front war.

Other Critical Materials

A wide range of chemicals was required both directly and indirectly to meet military needs. To insure the most effective distribution of critically short chemicals, the WPB requested the Production Division, ASF, to render decisions about the proper division of the supply for end uses. As an illustration, the WPB put into effect the recommendation of the ASF representatives regarding the distribution of phthalic anhydride to the following basic military uses: smokeless powder, rocket powder, insect repellent, insecticides, dyes, smokes, drugs, protective coatings, plasticizers, resins, rubber, and petroleum.

Chemical expansion programs of particular interest to the Army Service Forces were initiated and sponsored with the cooperation of the WPB. Among these were the expansions of benzyl benzoate for use as an insecticide; silica gel for moistureproof packaging of military equipment; vinyl film for ammunition protection and weapon covers; naphthenic acid used in mildew-proofing; mercuric oxide and

caustic potash for Signal Corps batteries; anhydrous hydrofluoric acid for secret military programs, freon and aviation gasoline alkylate; chrome chemicals for pigments, textile, metal and leather uses; and metallic sodium for tetraethyl lead, metal treating and methacrylate plastics.

Expediting activities on penicillin production for the fiscal year 1945 were limited largely to the scheduling and follow-up of the supply of specialized finished scientific and technical equipment. The difficulties encountered had primarily to do with fabrication capacities; there were no important problems in basic materials. The facility program was virtually completed by 1 January 1945. Deliveries of penicillin during July 1944, totaled 101 billion units. Deliveries during June 1945, reached 139 billion units.

Lumber

WPB order L-335, effective in July 1944, instituted for the first time a distribution control which limited the receipt of lumber by means of quarterly allotments and accounting. This distribution control was reasonably effective, and no real difficulty was experienced in obtaining adequate lumber supply during the first half of the fiscal year. The real test of WPB order L-335 appeared in the second half of the year. It became apparent in December 1944, that not enough suitable lumber was available for military packaging. Since Western Pine lumber was a superior specie for packaging purposes, action was taken by the WPB to limit further the sale of that specie and channel it only to the most essential military uses. A serious shortage also developed in the supply of high grades of heavy hardwood. In order to assure supply of these hardwoods for wood cargo truck bodies, tent pins, landing craft, ship repairs, and similar purposes, the WPB restricted the use of heavy hardwoods to military programs of the highest urgency.

With the shift of emphasis to the Pacific war, the reserve which West Coast sawmills were obligated to hold for military orders was increased from 35 to 45 percent, and a cutting directive was issued to obtain the maximum production of the items of lumber most urgently required by the Army. In addition, Corps of Engineers contracts with sawmills in Alaska were extended indefinitely, and the Central Procuring Agency made arrangements to ship Alaska lumber to the Pacific. Furthermore, approval was obtained from the Canadian Timber Control to permit purchase of substantial quantities of lumber produced in British Columbia.

Rubber and Rubber Products

With the completion of the synthetic rubber plants, a production of 860,000 long tons was achieved during the fiscal year 1945. Synthetic rubber became the basic material in most Army rubber products. In addition to tires, tubes, and bogie rollers for tracked vehicles, large quantities of synthetic rubber and smaller amounts of natural rubber went into the production of gasoline, water and oil suction-discharge hose, gasoline dispensing hose, wire-braided hose, footwear, soles and heels, medical and surgical goods, fuel cells, gas masks, special gaskets, rubber lubricated bearings, vibro-insulators, pressure sensitive tape, rubber insulating tape, hydraulic brake cups, micro-

porous battery separators, flotation equipment, and many other items. Production of all of these goods was substantially increased during 1945.

Tires

After the invasion of Europe, demands for replacement tires of all types and sizes reached unprecedented heights. These large demands, plus tires required for equipment being manufactured, severely taxed production facilities. At the time of the invasion, theater stocks were relatively low. The large replacement demands immediately resulted in a severe drain on these stocks, and in turn on zone interior stocks and on manufacture.

In spite of concentrated efforts to increase production, it was necessary during the last 3 months of 1944 and the first 2 months of 1945 to place in effect stringent restrictions on the use and issue of tires for military vehicles in zone of interior. Station stocks of tires were prohibited; only vehicles in special categories were allowed to be equipped with spares. To the maximum extent possible, all combat serviceable tires were removed from vehicles in zone of interior and returned to depot stocks. This was accomplished by removing tires from all vehicles in storage and undergoing repair. To the extent necessary, the tires removed were shipped overseas to help meet the increased demands. Vehicles were accepted from manufacturers without spares, and it was necessary to accept a considerable quantity of vehicles without any tires on them.

Meanwhile, production was increased to the maximum extent possible by bringing additional plant facilities into operation and increasing the length of the work week in rubber and related plants. Every effort was made by the WPB and the tire industry to meet the increased demands. Allocations to the Army were made in the maximum amounts possible, even at the expense of essential civilian transportation. Twenty-eight companies asked the Government to pay the cost of training new labor forces and to provide guarantees against losses from any future cut-backs in the program. The last request was met by placing firm orders through December 1945.

During the last 6 months of the fiscal year, the situation eased somewhat as a result of increased production, and then of the end of the war in Europe. By 1 June 1945, the entire Army requirements were being met with the exception of some three or four large truck tire sizes. The shortage in these sizes occurred because of increased requirements for large, low pressure, oversize tires known as "high flotation" tires. These tires were designed to obtain increased flotation on deserts and beaches, and in mud and snow. They were particularly adaptable to the type of warfare waged in the Pacific. Combat troops in the Pacific theater were being equipped with these tires as rapidly as production permitted.

Wool Fabrics

Because of greatly increased requirements, Army deliveries of woolen and worsted fabrics increased from 12,892,000 yards in the first quarter of the fiscal year to 56,000,000 yards in the last quarter. The allocations to the Army Service Forces in this last quarter represented 75 percent of the total estimated production of worsteds

and 30 percent of the total estimated production of woolens. During the fiscal year, the WPB imposed progressively tighter controls on the woolen and worsted industry in order to channel more yardage to the military programs. Since priority regulations were difficult to apply in such a diversified industry, the WPB found it necessary to "freeze" stated percentages of bottleneck operations for military production. Control orders were issued on the combing and processing of wool top, and on the spinning of wool yarn. Facilities in this industry were ample to meet all needs. Total production, however, had decreased since 1943, because of labor problems arising from low prevailing wages and because the industry was held to be relatively nonessential until early 1945. In February 1945, the Army Service Forces provided a special projects team which was successful in breaking the bottleneck in the combing of worsted top within 4 months.

Cordage

Cordage (rope) was extremely critical throughout the year because of fiber shortage. Manila (abaca) fiber stocks steadily declined with the lack of importations from the Philippines. The project to grow abaca fiber in various Central American countries yielded 8,256,000 pounds in the first half of the fiscal year 1945 and approximately 10,400,000 pounds in the second half. The War Production Board allocated to the Army 82,000,000 pounds of cordage in the fiscal year 1944 and 103,000,000 pounds in the fiscal year 1945. In view of increased military needs and short supply, it was necessary to conserve all uses. An Army conservation program was begun and all military requirements were carefully screened. Excess stocks were shifted between technical services wherever possible. There was no need to expand cordage making facilities. Production was hindered, however, by a shortage of manpower. The Army and WPB assisted individual mills, and the cordage industry was placed on the Production Urgency List on 2 March 1945.

Cotton Duck

During the fiscal year 1945 the major textile production problem of the ASF was that of meeting military requirements for cotton duck, principally for tentage. Increased production was obtained as a direct result of two major actions of the Army Service Forces. The first was a recommendation to WPB to issue an order whereby looms producing other fabrics were converted to the manufacture of duck and duck substitutes. Secondly, a Cotton Duck Special Project Team of 45 officers and 1,100 enlisted men, under the supervision of the Industrial Personnel Division, was sent into 77 southern cotton mills producing approximately 85 percent of the total output of duck and duck substitutes. The principal activity of this team was to recruit workers, combat labor turn-over, and check absenteeism. Production urgency circulars on cotton duck were sent to regional War Production Board and War Manpower Commission offices. Monthly production of duck and duck substitutes maintained an average of 75 million yards for the last half of the year, an increase of more than 100 percent over the corresponding period in 1944. The output of large tents went from 10,000 a month to 100,000.

Other Production Efforts

The ASF concern with the output of raw materials and component items was only a part of the total production effort required to realize procurement goals in the fiscal year 1945. Each technical service worked closely at all times with its prime contractors to insure that output met desired schedules. The Quartermaster General brought garment manufacturers to Philadelphia to learn the operational details in making wool field jackets. Special machines were obtained for these contractors and overtime pay was authorized. The work was evenly spread by resort to mandatory orders. The result was the production of nearly 8 million jackets.

The Ordnance Department perfected and put into operation a new method of shell loading. Two machines, the multiple volumetric shell loader and the multiple core melter, eliminated tedious hand operations and put shell loading on a production line basis. Nearly 5 million man-hours were thus saved during the year. The Watertown Arsenal, having already perfected the casting of gun tubes from 37-mm to 105-mm, finished a machine for casting centrifugally the tubes for 155-mm and 4.7-inch guns and 155-mm and 8-inch howitzers. In order to meet heavy artillery demands two large contractors' plants renewed operations, another one was expanded, and a Government-owned, privately-operated plant was reopened. The rebuilding of heavy guns in the United States became a major production job. Three 155-mm guns which were first shipped to Italy in February 1944 were returned in October. They were sent to a Milwaukee company for retubing and were back on their way to Europe in December, as good as new.

These are merely examples of the production problems met and solved in 1945.

Production of Heavy Trucks

At the start of the fiscal year the ASF truck requirements totaled about 657,000 vehicles for the calendar year 1944 and 500,000 for the calendar year 1945. Production during the first 6 months of 1944 amounted to 304,000, leaving about 353,000 for the last half of 1944 against which about 311,000 were produced. The light and medium truck production for 1944 closely approximated the requirements, but light-heavy and heavy-heavy truck production fell approximately 10 percent and 22 percent, respectively, below the requirements existing at the start of the fiscal year and about 7 percent and 16 percent below the final 1944 requirement. Production for the last half of 1944 amounted to 311,238 trucks, consisting of 122,064 light, 37,956 medium, 120,239 light-heavy and 30,889 heavy-heavy trucks. Production for the first 5 months of 1945 amounted to 244,458 trucks, consisting of 100,216 light, 17,040 medium, 103,971 light-heavy and 23,231 heavy-heavy trucks. Requirements for the year 1945 reached a peak following the December 1944 German offensive totaling 628,804 vehicles during January but dropping to 575,885 during March, 510,476 during April (start of one-front procurement) and 366,014 during May.

Production during the first 6 months of 1945 was adjusted as rapidly as possible to changing requirements. Negotiations were

undertaken with FEA and other Government agencies whereby production of certain military type trucks was continued for a limited period for account of FEA, thus making it possible to use up materials in process, provide FEA with trucks sooner than would otherwise have been possible, and reduce cancelation costs to the Government. This action also reduced the FEA requirement for commercial type trucks, making larger quantities available to the civilian economy.

Conservation

More stringent conservation measures on end products made of leather, textiles, forest products, and lead were imposed during the year. Downgrading in the quality of leather for shoes and in some textile materials was necessary to meet procurement goals. Certain requirements for athletic equipment, for example, could not be met because of the shortage of chrome-tan leather. There was a considerable interchange of various types of leather and textile fabrics among end products in order to extend the available supplies to maximum degree. Forest products, in general, and those used in containers in particular, became increasingly critical. Requirements for redeployment packaging placed an additional load upon reduced supplies. Again, downgrading and the interchange of materials were resorted to in an effort to relieve the situation. The use of western pine was limited largely to critical types of packing, and hardwood plywood had to be substituted for softwood plywood at an increased cost. Increasing requirements for lead, together with decreasing supply and rapidly depleting stocks, necessitated conservation measures which prohibited all less essential uses.

The basic materials—aluminum, copper, and zinc—were critical during the winter, then eased considerably, and by the end of the fiscal year were available for all essential and even some nonessential uses. Remaining conservation controls within the ASF were then lifted. The steel situation was still confused, but most conservation controls were removed after the revocation of the WPB orders controlling end uses of steel. During most of the year the available supplies of stainless steel (and certain ferroalloys) did not permit its use in many desirable military articles.

Stringent controls on materials to be used in construction were continued at the end of the year. A complete revision of the Army-Navy Munitions Board List of Prohibited Items for Construction Work was issued on 10 March 1945 and again on 15 June 1945. The second revision retained careful check on the use of lead, rubber, wood, steel and iron, and other products.

Specifications

Particular emphasis was placed in 1945 on the activity of the Joint Army-Navy Committee on Specifications. About 200 Joint Army-Navy Specifications were promulgated by 30 June 1945, covering important items in various fields, such as electronics, shipboard equipment, chemicals used in explosive and chemical warfare, optics, clothing, photography and cinematography equipment and supplies, medical equipment and supplies, and advanced base construction equipment.

A total of approximately 610 new and 275 revised United States Army Specifications were approved, and some 500 proposed Federal specifications and amendments were cleared within the War Department. The War Department also worked with the National Bureau of Standards in the development of commercial standards and simplified practice recommendations in various fields of production.

During the year a project to establish a common language for blueprints throughout the War Department, the Navy Department, and industry was started. In compliance with a joint directive dated 30 November 1944, signed by the Secretary of War and the Secretary of the Navy, the Joint Army-Navy Committee on Specifications established a subcommittee on drafting room standards. This committee outlined the initial scope of much of the job ahead, which would deal with drafting room subjects in the field of civil, mechanical, electrical, aeronautical, and marine engineering. The Army and Navy representatives met with the American Standards Association and industry representatives to form a committee to tackle the problem of further coordinating Army-Navy drafting room practices with those of industry.

Standards were being developed on abbreviations; methods of specifying threads; types of lettering; drawing forms and sizes; graphical, diagrammatic and schematic symbols; methods of indicating and specifying materials; methods of indicating and specifying finishes; methods of dimensioning and indicating tolerances; and methods of numbering drawings.

The framework for a sectionalized manual was drawn up in considerable detail and circulated for study. As standards were agreed on, they were to be issued as parts of the manual.

Packing and Packaging Developments

A basic plan for reorganization of packing and packaging activities was drawn up in 1945 in an effort to correct and systematize activities of the different packing and packaging sections of the technical services and to standardize packaging specifications, instructions, methods, and testing procedures. This plan proposed the establishment of an Army Packaging Board and recommended the establishment of a similar Board in the Navy Department. The Navy Packaging Board was established in November but did not actively operate until January. The Army Packaging Board was established by order of the Commanding General on 11 December 1944; the Army Air Forces officially joined the Board in February 1945.

The Joint Army-Navy Packaging Board was established by section II War Department Circular 80, 1945. This Board had jurisdiction over both the Army and Navy Packaging Boards, and any points which could not be resolved by the two boards were brought before the Joint Army-Navy Packaging Board.

Besides coordinating the JAN specifications on standardized materials, the Board prepared instructions on the use of these materials as well as procedures for packaging equipment and supplies procured by more than one agency. These instructions were known as JPI's (Joint Packaging Instructions).

The Army Service Forces Inspection Manual, issued in March 1944, was expanded during the year to include a section on Standard ASF Inspection Forms designed to aid in standardization of the paper work of inspectors in the several technical services. During the fiscal year 1945, the preparation of inspection manuals, supplementing the ASF Inspection Manual, was completed by all the technical services.

A series of training conferences on the application of Statistical Quality Control procedures to acceptance inspection was held under the sponsorship of the Production Division. Four technical services adopted these techniques, formerly used only by one. Inspectors were trained especially to watch the packaging and packing of matériel.

Various obstacles were eliminated which hampered the interchange of inspection between the several technical services, the Army Air Forces, and the Navy Department. A uniform method of obtaining bills of lading was agreed upon to be used when one technical service, the Army Air Forces, or the Navy inspected for another organization. Larger procurement under Joint Army-Navy Specifications also helped to promote an interchange of inspection.

VE-Day Cutbacks

The curtailment of supply requirements after VE-day meant that production schedules by December 1945 would be 27 percent below March deliveries, while average monthly deliveries scheduled for the first quarter of 1946 would be 32 percent below March 1945 production.

The initial production adjustments were made early in April 1945, when approximately 100 industrial construction and equipment projects not needed for the war with Japan and not scheduled for full operation before 1 September 1945 were canceled. The reduction in schedules for ammunition and tanks, the principal items involved, actually was a curtailment of projected increases rather than a decrease from the then current volume of production.

A second procurement reduction was begun on 25 April 1945. Separate orders were issued to each technical service to place into effect the procurement program developed for adoption upon the defeat of Germany, with appropriate changes in order to reflect additional supplies recovered from Europe.

The policies used in selecting the contracts to be cut back under these adjustments were prescribed by the Director of War Mobilization and Reconversion on 20 January 1945, and were published in joint Army-Navy regulations governing contract terminations. A special provision, effective with the defeat of Germany, prescribed, and actually put into operation on 30 April prescribed that privately-owned plants not normally engaged in production of a military character should be granted first priority in release from war production, with due consideration being given to the wishes of the contractors and to plants located in isolated sections with no opportunity for displaced workers.

The regular procedures then in effect were continued for making production cutbacks. Accordingly, the selection of contracts for each large cutback was reviewed by a board of review in the office of the chief of a technical service and then by the Production Readjust-

ment Committee of the War Production Board, as provided for by WPB Directive 40, 5 March 1945. Under the procedure, advance rulings were obtained for each proposed cutback involving a reduction of more than \$500,000 in total deliveries scheduled in the current month or for any other of the succeeding 11 months under all prime contracts then in effect. An advance report to the War Production Board, the War Manpower Commission, and the Smaller War Plants Corporation was made for each contract termination or change in delivery schedule under any one outstanding contract which reduced deliveries in the current month or in any one of the succeeding 11 months by over \$100,000, and which had not been approved by the Production Readjustment Committee in advance. Subsistence and other specifically named programs were expected from the operation of these procedures.

In accordance with established policy, at least 7 days' notice was given to a plant before a curtailment in deliveries which would cause a substantial release of workers or a reduction of deliveries of more than \$100,000 in the current month or in any one of the succeeding 11 months in one establishment. These procedures meant that it took time to carry through cutbacks; yet they also enabled the ASF to keep each interested Government agency fully informed about all reductions in production schedules.

At the same time that the Army began to cut delivery schedules, the War Production Board began to modify its limitation, allocation, and other restrictive orders governing general industrial production. Each proposed change was reviewed by the ASF to determine its probable effect upon continuing ASF production demands. By 30 June 1945, of some 500 WPB limitation, conservation, allocation, and production orders, 150 had been revoked, and others were being curtailed as military requirements declined.

Labor Supply

From the beginning of the fiscal year to May 1945, labor supply problems were a constant threat to the attainment of the Army Service Forces procurement program. All of the methods for meeting this obstacle used in the previous year were continued and extended during these 10 months. Many critical production programs were unable to meet delivery schedules because of manpower shortages. Moreover, these labor supply difficulties tended to become greater each month, until the cutbacks in production programs at the end of April eliminated many current and anticipated labor supply problems. Not only were monthly deliveries to the Army Service Forces in July 1944, at the lowest volume in 17 months, but also the total employment in all munitions industries was nearly a million persons less than in November 1943. The immediate labor problem was to provide the necessary workers for critical production programs; notably, artillery and artillery ammunition, trucks, tanks, tires, and cotton duck. Labor shortages were widely recognized as the principal bottleneck to be broken if war production goals were to be achieved.

Five major limiting factors complicated the labor recruitment job. In the first place, there was no longer a large group of unemployed workers available for war production. Average monthly unemployment in the calendar year 1944 fell to the rock bottom figure of 840,000

persons as compared with over 8 million in 1939, over 7 million in 1940, and 5 million in 1941. Secondly, women could not be counted upon to enter the labor market in such numbers as they did in the early war period. The monthly average number of women in the labor force increased by only 500,000 between 1943 and 1944, as against an increase of 3.8 million between 1941 and 1943. In the third place, the armed forces had withdrawn an additional 4.6 million males from the civilian labor force between January 1943 and July 1944 in order to raise the total strength of the armed forces to the scheduled peak of 11.6 million. In the fourth place, the fact that there were more jobs than workers made it difficult to staff textile mills, forge shops and foundries, and plants in other low wage or otherwise unattractive industries. Finally, until the von Runstedt counteroffensive was launched in December 1944, there was a feeling in the United States that the end of the war in Europe was only a matter of days. Workers preferred to take jobs with apparent post-war security rather than to accept employment in direct munitions industries.

When the War Manpower Commission and the War Production Board established local production urgency and manpower priorities committees in all of the 300 major labor markets of the country, representatives of the Army Service Forces actively participated in this work. Nearly 250 officers gave much of their time to this activity in the field. Through careful screening of the labor needs of individual establishments engaged in activities of interest to the ASF, and by presenting the validated labor needs of war production plants to these committees, Army representatives were generally able to obtain adequate employment ceilings and satisfactory manpower priorities. ASF regional representatives and officers from ASF Headquarters constantly assisted local military representatives in every possible way to obtain manpower assistance for critical production. Labor shortages in communities and plants were attacked at the local level, the regional level, and on a national level. Many-sided publicity programs were used, including recruitment devices designed to obtain the services of persons not normally employed and to effect voluntary transfers of workers from nonessential to essential work. Morale programs were widely used to reduce turn-over and absenteeism in critical plants.

Weekly ASF manpower conferences presided over by the Commanding General and attended by chiefs of technical services and their major labor and production advisers were initiated. These conferences discussed particular production delays which were being caused at least in part by labor difficulties, and made certain that appropriate steps were being taken throughout the ASF to meet these difficulties. Written reports from regional labor representatives and from technical service procurement offices were received on outstanding problems, accomplishments, and techniques used by labor officers. Information on all successful manpower techniques was pooled and made available to all procurement services.

The success of the special teams assigned to meet the labor supply problems of the Boeing Plant in Seattle and of the Los Angeles aircraft industry in the preceding fiscal year suggested the further use of this device in solving manpower difficulties. A section was established

within the Industrial Personnel Division to plan and supervise special action taken to overcome specific manpower shortages of grave importance to the War Department. During the year special project teams were established to deal with manpower problems in the following industries or areas: Military tires, forges and foundries, Douglas Aircraft in Chicago, cotton duck, the Newark area, the New Bedford area, carbon black, wool top, aluminum extrusions, high tenacity rayon, cotton tire cord, and western railroads. In only two of these were the special teams still active at the end of the fiscal year—wool top and the western railroads. The manpower teams assigned to these industries varied in number of personnel and in form of organization. In the case of the Douglas plant in Chicago and the Newark and New Bedford areas, the team consisted of a single officer reporting to ASF Headquarters. On the other hand, the cotton duck team was composed of 45 officers who devoted their full time to the many plants comprising a large segment of an industry. In every instance, team members had written authority for their activities from the Under Secretary of War or the Commanding General, ASF. ASF regional representatives and service commands cooperated with the work of these groups.

Some of the industries in which manpower problems were thus attacked were industries having prime contracts with the Army Service Forces, such as cotton duck. The Douglas Aircraft Company, of course, was a contractor of the Army Air Forces. The work done in forges and foundries, aluminum extrusions, wool top, tire cord, and rayon was performed in industries whose operations were supervised by the War Production Board. At first the War Production Board was not enthusiastic about this work. On the other hand, a decline in production in these industries directly limited deliveries by prime contractors to the War Department. In the second quarter of the fiscal year, however, the War Production Board was more favorably disposed toward the special project effort, and in the last 6 months encouraged the War Department to attack more and more manpower problems affecting entire industries. The work in carbon black, wool top, aluminum extrusions, high tenacity rayon, and cotton tire cord was all undertaken in the last half of the fiscal year. The War Department refused to assume manpower responsibilities in the civilian industry field generally and insisted upon confining its attention to the critical emergencies of real importance to the delivery of war matériel.

Although a wide variety of techniques was used in overcoming manpower problems, each program concentrated attention upon the particular problems in the immediate industry or area. In Newark, for example, major attention was given to mobilizing local management, labor leaders and Government officials to support a campaign to obtain and retain men and women for war jobs. In the tire project the emphasis was upon alleviation of labor relations difficulties and upon obtaining soldiers for production lines. The use of foreign workers was the most important practical solution to the manpower problems in the forge shops and foundries. The cotton duck team concentrated upon in-plant activities to reduce absenteeism and turnover and on the creation of a community attitude throughout the southeast which would assist the recruitment of workers.

The special manpower project technique achieved results which were sometimes spectacular and always creditable. For example, the production of tires increased 45 percent from November 1944 to March 1945. Cotton duck production increased 30 percent from December 1944 to March 1945, and employment levels in the industry were raised substantially.

There was increasing evidence during the year that inadequate housing, transportation, and community facilities were responsible for manpower stringencies impeding urgent war production. Through various local, state, and national governmental agencies the ASF continually met and disposed of specific problems involving the transportation of war workers, and such community problems as rent controls, evictions, food supply, commuting rates, and in-plant recreation and feeding. By March 1945, the appropriation to the National Housing Agency earmarked for housing projects of immediate interest to the War Department was fully committed. For a time thereafter, housing projects vitally necessary in obtaining production of critically needed munitions items were financed from the War Department's appropriation for expediting production. In April, a deficiency housing appropriation became available to the National Housing Agency.

The increase in military demands for men under 30 years of age required a review of industrial deferments in the second half of the fiscal year. Arrangements were made with the Selective Service System whereby certain Government agencies, including the ASF, were authorized to certify for deferment up to a maximum of 30 percent of the outstanding deferments in the age group 26 to 30. In this way, young men were provided to meet the requirements of the armed forces without wrecking industries whose output was essential to the war effort.

At various times the War Department continued to assist industry by releasing highly skilled men from the Army for temporary periods to work in critical industries. In December and January an extensive program for mass furloughing of men from the Army was inaugurated which released workers to the cotton duck industry; foundries and forge shops; heavy tires, heavy ammunition and aluminum sheets industry; and for the construction of certain ordnance facilities. These mass furloughs were granted for periods of 3 months and in some cases were extended to a fourth. Upon expiration of the furlough, individual soldiers whose continued services were needed were permitted to remain in the industries.

Prisoners of war were also extensively used to meet labor shortages. By June 1945, some 140,000 prisoners were employed in the following industries: agriculture, 85,000; forestry, 25,000; food processing, 25,000; and other industries, 5,000. An agreement was made with the War Manpower Commission and with the Building and Construction Trades Department of the American Federation of Labor governing the use of prisoners of war on construction and maintenance work.

At the instigation of the Army Service Forces, arrangements were made in the autumn of 1944 between the War Manpower Commission and the War Food Administration for the transfer to war industries of some 5,600 foreign workers released from agriculture at the end of the harvesting season. Another 18,500 persons from the West Indies were imported to work in foundries and forge shops and the pulp wood

and food processing industries. Although efforts to arrange for the importation of Mexican nationals for industrial employment were generally unsuccessful, some 64,000 were recruited to work on 36 railroads in the United States which were heavily engaged in the shipment of war goods.

All of these efforts had their effect upon war production. The 12-month continuous decline in munitions employment was halted at the November 1944 figure of 9.1 million persons and remained at that level until March 1945. By March, most critical ASF programs were, in general, not being impeded by lack of manpower, although it had been expected that serious problems would develop during the last quarter of the fiscal year in meeting accelerated production schedules. Fortunately, these problems did not materialize, since the cutbacks starting in April wiped out many anticipated expansions. Further adjustments in programmed procurement during May and June brought about other reductions which eased the manpower situation. The functions of local production urgency and manpower priorities committees were reduced as production and manpower controls were relaxed. In some places, the committees were completely abolished. After VE-day a program was begun to withdraw approximately 25 percent of the certified deferments for persons under 30 years of age. The release of key personnel to industry was also stopped as no longer necessary to maintain war production. Schedules were arranged to effect a withdrawal of all men furloughed to industry by 1 December 1945.

Labor Relations

During 1945 the War Department continued its firm policy of avoiding any direct or indirect participation in collective bargaining or in the merits of controversies between management and labor. On the other hand, the War Department could not remain idle when its supply program was jeopardized by work stoppages. Through its labor officers in the field and at Headquarters, the War Department kept all parties constantly aware of the disastrous consequences of strikes. In emergency situations appeals were made directly to the workers by Army officers in cooperation with the Department of Labor and the War Labor Board. These appeals were based upon an insistence that orderly procedures be utilized in the settlement of disputes. In this way, serious threats to aircraft, rubber, foundry, truck, radar, transportation, and other services were averted or materially reduced during the year.

The time lost through labor disputes affecting War Department procurement was greater in the fiscal year 1945 than in any preceding year since the beginning of the war. In August 1943, for example, 76,400 man-days were lost through strikes affecting War Department procurement, as compared with 549,300 man-days lost in August 1944. In April 1944, some 226,500 man-days were lost through strikes as compared with 880,500 man-days lost in April 1945. These disputes arose for the most part as a result of controversies over wages, working conditions, and job discipline. Wage issues were the most important single cause of strikes. At the end of the fiscal year, work stoppages were apparently on the increase. The labor relations outlook was

darkened by a growing unrest among workers and the weakening of the no-strike pledge after victory in Europe.

In 16 cases during the year, the refusal of management or labor to abide by decisions of the War Labor Board led to orders from the President for the War Department to seize and operate industrial plants. Of these 16 seizures, 9 resulted from noncompliance by management with Government directives and 7 from noncompliance by labor groups. Seven of the facilities were returned to private management and War Department possession terminated before 30 June 1945. Three of the establishments still in War Department possession were operated on a token basis only. The plants still in the possession of the War Department on 30 June were the Hughes Tool Company, the Farrell-Cheek Steel Corporation, the Bingham and Garfield Railway Company, the Cocker Machine and Foundry Company, the Gaffney Manufacturing Company, the Merry-Leila Cotton Mills Company, the Diamond Alkali Company, the S. A. Woods Company, the Hummer Manufacturing Company, the Cudahy Packing Company, and Montgomery Ward and Company.

Chapter 13. PROCUREMENT PROBLEMS

Purchasing

As in the past, the primary objective of Army purchasing policies was to place contracts in sufficient time and quantities to obtain desired deliveries. Much emphasis continued to be given to the establishment of close contract prices, improvements in the techniques of pricing, the placement of contracts in areas with adequate available labor supply, the maximum utilization of smaller war plants, the centralization of procurement of like items wherever this was advantageous to the Army, and the simplification of purchasing procedures.

Since procurement during the fiscal year 1945 was primarily intended to provide consumable supplies, replacements for existing equipment, and operational supplies, every effort was made to shorten the length of contract commitment in order to permit maximum flexibility. As a general policy, the placement of contracts was restricted to the minimum time and quantity practicable.

During 1945 the number of procurement district offices in the ASF was reduced from 55 to 49. Signal Corps procurement offices were reduced from 3 to 2 with the transfer of the office at Wright Field to the Army Air Forces. The Corps of Engineers concentrated procurement in 5 of the 9 division offices: New York, Atlanta, Columbus, Chicago, and San Francisco. Each was assigned centralized responsibility for the purchase of particular types of items, while district offices were used to help administer contracts and expedite production. In addition, the central procuring agency continued to maintain three offices for the purchase of lumber, and three district offices on the west coast also had purchase responsibilities. The Transportation Corps ceased to let contracts through 9 zone offices in favor of concentrating procurement in 4 area offices located in New York, Chicago, New Orleans, and San Francisco. The Ordnance Department continued to purchase supplies through 13 district offices, the Quartermaster Corps through 8 depots and 9 field offices, and the Chemical Warfare Service through 6 district offices. The Medical Department continued to purchase through a single office in New York City. These figures do not include the 33 market centers purchasing perishable subsistence throughout the United States.

The procedures employed by district procurement offices were standardized by the issue in final form of ASF Manual M 603, "Procurement Office Purchasing Manual." The volume of contract placement during the year measured in terms of obligations of procurement funds amounted to 27 billion dollars, compared with 23 billion dollars of the year before. The actual number of purchase transactions amounted to over 1,300,000.

During the fiscal year the Director of the Purchases Division approved 770 contracts for more than 5 million dollars each. In addition,

the Purchases Division began a survey in the principal procurement district offices to review contracts placed by those offices with an individual value of less than 5 million dollars each. This survey was under way at the end of the fiscal year.

At the request of the Under Secretary of War a new compilation of information about the number and value of prime War Department contracts outstanding as of 30 June 1944 was completed in the first quarter of the fiscal year. A list was made of all contracts of \$10,000 or more in effect on that date. It was found that there was a total of 45,793 such contracts signed by 11,650 separate prime contractors. The aggregate original dollar value of these contracts came to more than 77 billion dollars.

A number of important changes were made in the procurement regulations of the War Department during the year. Procedures and standards were established for the prompt ratification of informal contractual action and for the prompt settlement of claims arising under Section 17 of the Contract Settlement Act. New policies and contract forms were established for the voluntary adjustment of royalties and the settlement of claims for the unauthorized use of inventions under the Royalty Adjustment Act. The forms and procedures for reporting purchase actions were revised. Various regulations of the Office of Price Administration required changes in procurement regulations applying to War Department purchases and sales. The standard contract forms used by all procuring services were revised in the light of additional experience. The standard procurement form upon which contractors recorded their bids and gave detailed cost information was elaborated. The clauses on price revision and redetermination were substantially modified, and standard Army-Navy patent clauses were prescribed.

The Under Secretary of War placed new restrictions during the year upon cost-plus-a-fixed-fee contracts which not only curtailed their use but also required existing contracts to be converted to a fixed price basis as rapidly as possible. The Purchases Division in ASF Headquarters carried out the new policy. The criteria established for conversions were cleared with the Fiscal Director, ASF, the Inspector General, and the General Accounting Office. Procurement regulations were revised to enforce the new restrictions on issuance of CPFF contracts. On 30 June 1945 the work of conversion was still in progress. It was expected to be completed early in the fiscal year of 1946.

Arrangements were worked out during the year whereby procurement district offices continuously reviewed lists of surplus property held by disposal agencies to make sure that they were not placing contracts for any items already available through surplus property disposal channels. Another procedure was developed to provide information about cancellations to various agencies throughout the Government so that they might take over desired contracts before they were actually canceled.

A specified purchase order or contract form was introduced for all procurement under \$5,000. This standardized the short-form purchase orders used by various services and simplified the whole administration of procurement of less than \$5,000.

Letter purchase orders and other preliminary contractual agreements were converted to formal contracts within as short a period as

possible. Reports from technical services showed that increasing progress was made in reducing the time lag between granting of a letter of intent and the actual completion of the formal contract. This avoided many legal problems surrounding contractual relationships.

Procurement Assignment

During the fiscal year 1945 the Procurement Assignment Board in ASF Headquarters assigned responsibility for procurement of common items to a single service in 1,040 separate actions involving some 3,000 items of equipment. Among the articles whose purchase was centralized during the year were watches, gloves, air-conditioning equipment, microfilming equipment, aircraft crash rescue boats, numerous items of office supply, as well as over 500 separate packaging and processing materials. All watch procurement was assigned to the Ordnance Department when the WPB informed the War Department that the watch industry was unable to schedule its production satisfactorily because Army demands were not received far enough in advance. Certain manufacturers were overloaded, while others had insufficient business to maintain adequate staffs of highly skilled workmen. A new shoe developed by the Air Forces to be worn by crew members on high altitude bombing missions was assigned for procurement to the Quartermaster Corps in order to avoid any disruption in the critical shoe market. This new shoe was worn under heavy outer boots which were discarded upon abandoning a plane.

Pricing

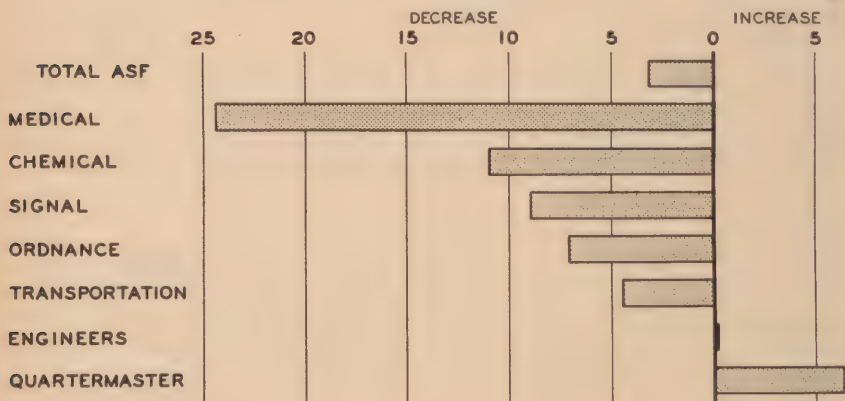
The techniques employed in pricing procurement contracts were further improved during 1945. There was a considerable expansion in company pricing program. The companies for over-all pricing review were selected early in the fiscal year. In September 1944, the program was extended and the chief of each technical service was made responsible for reviewing the pricing policies of each company assigned to his service for statutory renegotiation. In October a manual on company pricing was finished and issued. Further improvements in the entire procedure were announced in May 1945. A national meeting and a series of seven regional conferences provided the medium for educating pricing personnel responsible for the administration of the program.

Many business executives and writers expressed fears about the company pricing program. In large part, this concern was based upon misinformation and misconceptions. Accordingly, the Purchases Division undertook a campaign to inform war contractors of the real reason for the program. Articles were published in various magazines and newspapers. A number of news services also wrote about the program. Army officers spoke at various meetings of business groups in different parts of the country. In addition, arrangements were made with nine trade associations for presentation of the War Department's views to their memberships. By June 1945, there were 44 company pricing offices established by the War Department. Some 2,146 companies had been selected for company pricing review and 424 companies had concluded pricing agreements or understandings with the War Department.

In the light of experience gained throughout the year and in accordance with suggestions from many contractors, the contract articles on pricing were rewritten during the year. The most important change was a shift from historical costs as the basis for negotiating price revisions to future estimates of cost. The accounting provisions of the price articles were relaxed and made uniform. Other provisions were also standardized. These important steps were expected to contribute to improved pricing in the future.

Shortly after VE-day price policies to be used during the period of the Japanese war were announced by the Purchases Division. Thereafter, procurement officers were to consider in price analysis such factors as the elimination of overtime, increasing competition among subcontractors, the relation of overhead charges to war production and the contractors' nongovernment business, and the possibility of dupli-

PERCENT CHANGE IN CONTRACT PRICES FROM JUNE 1944 TO JUNE 1945



cating payments to the contractor under two or more contracts. The company pricing program was changed to stress its use in developing background for better pricing of individual contracts rather than as a separate program. Price revision articles were recommended as a means of taking advantage of the probable restoration of the contractor's normal efficiency.

The downward trend in the ASF price index continued during the first 11 months of the fiscal year. At the end of the fiscal year the price index was 3.2 percent below the index on 1 July 1944. The price indexes were used to indicate the extent to which pricing methods were effective and pointed out specific areas where price study and possible corrective action were needed. The greatest decline in the index for any service occurred in the Medical Department, where a reduction of 24.4 percent occurred. Three services showed larger percentage declines than in either of the 2 preceding fiscal years—Medical Department, Transportation Corps, and Chemical Warfare Service. Two services registered an increase of prices during the year—the Quartermaster Corps and the Corps of Engineers. A considerable

part of the increase in Quartermaster prices resulted from the increased cost of food.

Price Control

The agreement made in September 1942 continued to exempt more than 60 percent of all War Department prime contracts from price control by the Office of Price Administration. As new or revised price regulations were issued by the OPA, they were first reviewed by the Purchases Division and all possible adjustments made to eliminate those parts which might adversely affect War Department procurement. There were some 75 War Department suppliers who encountered major price problems in 1945. The Purchases Division assisted these contractors in obtaining appropriate relief from the OPA.

The increasing production difficulty in the textile field was partly the result of price problems. Costs of manufacture rose more rapidly than corresponding increases in price ceilings. Many of these cost increases were occasioned by legislation which increased the price of cotton and yarn sold to the textile manufacturer. The War Department asked the Office of Price Administration to exempt textile procurement from price control. This was done on 9 March 1945 in an order permitting the War Department to pay higher than ceiling prices in accordance with OPA standards. Since the War Department was thus able to adjust prices without application to OPA, quicker adjustments became possible.

The sale of surplus, salvage, and scrap materials was placed under OPA regulation during the year.

New increased furlough gasoline allowances for service men on leave or furlough were arranged during the year. Under the new plan beginning in July 1944, military personnel on leave or furlough were given 1 gallon of gasoline per day while on leave, up to a maximum of 30 gallons. Arrangements were also made to issue gasoline rations to military personnel awaiting orders at redistribution stations and to discharges traveling home from place of separation.

The War Department also assisted war plants in obtaining meat when they were unable to purchase it on the market with existing ration points. This helped to solve some of the increasing feeding problems encountered by plants throughout the country. Two valid shoe coupons rather than one were issued to military discharges upon separation.

Centralized procurement of food and beverages at posts, camps, and stations was developed during the year as a means of obtaining a more orderly supply of these items.

Smaller War Plants

There was no change in the working relationships between the Smaller War Plants Corporation and the War Department during 1945. The simplified arrangements for mutual action inaugurated in the preceding year proved entirely satisfactory and remained in full force.

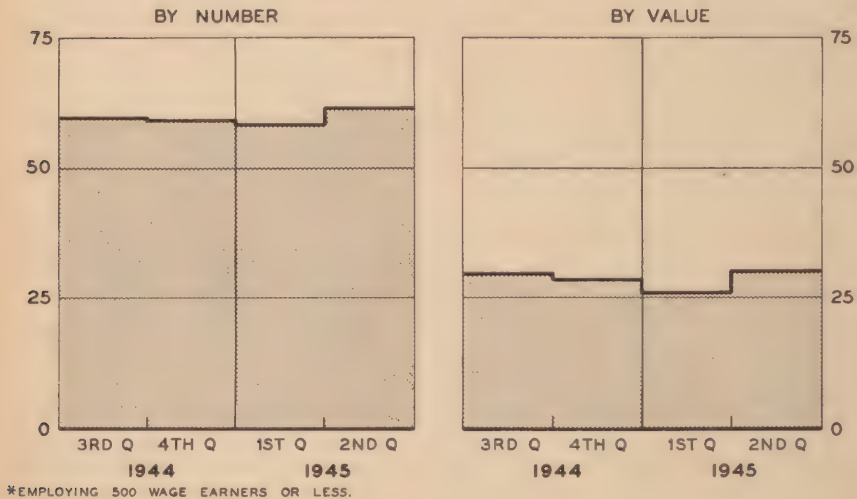
During the fiscal year a greater volume of business reached small plants through War Department prime contracts than heretofore. About 60 percent of the number of contracts made during the year were awarded to plants employing under 500 wage earners. More

than 27 percent of the total contracts went to plants employing less than 100 wage earners. In terms of total dollar value, about 25 percent of all contracts went to plants with less than 500 employees.

Training Contracts

All active training contracts under the Army Specialized Training Program except for medical, dental, and veterinary training were terminated on 30 June 1944 and new contracts written as of 1 July. The new contract differed in three important respects from those previously in force. First, the rate for instruction was made a fixed negotiated rate per student for a 12-week term not subject to revision unless the quantity or quality of the instruction was changed. Costs of instruction were no longer subject to audit, thus saving expensive

PERCENT OF ALL ASF NEW SUPPLY CONTRACTS
AWARDED TO SMALL PLANTS*



bookkeeping required for the segregation of accounts. In the second place, initial expenses for the start of the program were no longer allowed. With the reduced size, no further activations were considered necessary. In the third place, termination costs were more clearly defined and termination payments limited in general to amounts due until the close of the term in which the termination occurred.

The elimination of dental and veterinary training during the fiscal year 1945 brought the termination of these contracts. Altogether, 130 Army Specialized Training Contracts were terminated during the year. By 30 June 1945 final termination agreements had been completed for all but 11. Some 262 contracts had been negotiated or renewed and 132 were in force at the end of the year.

Local purchases

The growing shortage of many commercial-type items made it necessary to impose control upon local purchases by posts, camps, and stations throughout the United States. Lists of items in short supply were received from the WPB and transmitted to the technical services with instructions to make a careful study of Army supply and demand for these items. Considerable quantities of some of these items were found to be excess to military needs and were promptly declared surplus to relieve the short supply for civilians. The studies also indicated the extent to which existing supply channels could provide these items, thus eliminating the necessity for any local procurement.

Improvements in the maintenance program of the ASF also curtailed local demand for certain supplies. As a result, the volume of local purchases declined substantially during the year.

Special Purchasing Problems

In July 1944, various manufacturers of components parts stressed the fact to the War Department that they were not contractually covered in their operations, since prime contractors did not place sub-contracts with them far enough in advance to cover the actual time of production. Procurement regulations had been amended on 29 June 1944 to permit prime contractors to place orders with full consideration for the production time involved. Nevertheless, prime contractors did not make their orders in accordance with this policy. Both the War Department and the War Production Board in a memorandum in August 1944, emphasized the importance of placing orders promptly with full consideration of the required production time. Procurement regulations were again amended on 5 October 1944 to emphasize this policy. In December 1944, the War Production Board concluded that stronger measures were necessary to assure contractual coverage to manufacturers of component parts, primarily of a commercial type. The Chairman of the War Production Board, on 4 January 1945, requested the Director of Matériel to take further steps, including preparation of a contract clause requiring immediate ordering of component parts. Such a contract clause was prepared and sent to procuring agencies for incorporation in contracts on 20 January 1945. The Purchases Division made a number of different trips to procurement district offices to assist them in enforcing the new program. With the end of hostilities in Europe and the resulting decline in the procurement program, changes in this arrangement were discussed with the War Production Board. The War Department believed that the contract clause should thereafter be optional rather than mandatory in order to avoid any excess production of component parts.

During the fiscal year five requisitions were served by the War Department to obtain feathers and black pepper for the Quartermaster Corps, tin plate for the Chemical Warfare Service, and flight testing instruments for the Army Air Forces. Six mandatory orders were served under Section 9 of the Selective Training and Service Act of 1940 to obtain field jackets required by the Quartermaster Corps. One mandatory order was served by the Army Air Forces to procure certain electrical equipment.

In cooperation with the Navy Department, action was taken for the first time during the year under Title VIII of the Revenue Act of 1943 to reduce the prices of airplane parts produced by one manufacturer. For noncompliance with the repricing order the plants of the company were seized and operated by the Navy.

There were several instances during the year when manufacturers referred military orders to jobbers or other intermediaries, with a consequent increase of price. The War Department took the position that it would not buy through jobbers where manufacturers had previously sold directly. An exception was made where a jobber or other intermediary provided some service not obtainable directly from the manufacturer. The Purchases Division issued a directive which strictly curtailed these practices and suggested the use of preference rated orders and production directives from the War Production Board in the event manufacturers were recalcitrant. Thereafter, there was no further evidence of an attempt to shift orders to intermediaries at the expense of the Government.

The increased 1945 requirements for cigarettes and tobacco products and a decrease in total production made it imperative during the year to limit the quantities purchased for the armed forces. A careful study of the problem indicated that there was inadequate control of the quantity of cigarettes purchased by the Army and Navy. Consequently, a program for the control of procurement and distribution was developed. War Department Circular 135, 1945, introduced a tobacco rationing program within the United States effective 1 June 1945 and set up a plan for allocating issue of cigarettes to oversea theaters. The Navy Department adopted a similar program in order that no discrimination in the availability of cigarettes might exist between the two services.

A major procurement problem for the Signal Corps was the matter of patent infringement and the licensing of production. Originally it was the policy of the Signal Corps to require its contractors to determine liability for any patent infringement in the equipment made for the War Department. This policy meant that each contractor had to make extensive searches and negotiate its own licenses for production of communications equipment. An area of unknown liabilities remained from which the contractors' only protection was a contingent reserve. Such a reserve, of course, increased the cost of equipment. Moreover, the terms of indemnity clauses in contracts frequently delayed agreement between the Signal Corps and a contractor by weeks and even months. To remedy this situation the Signal Corps obtained the cooperation of the radio industry in a plan whereby the Government negotiated blanket licenses covering substantially the entire radio field. Licensors were relieved of responsibility for any patent infringement as whole or part consideration for the licenses. The Navy Department later joined in this program and bore part of the cost in cases where license fees were paid. By 30 June 1945, 165 licenses had been procured. The most important result of this Radio Industry Licensing Program was a great saving of time in contracting. The total cost of the licenses obtained was estimated as between 5 and 10 percent of the royalties which otherwise would have been paid indirectly as a part of the cost of equipment.

Renegotiation

During the year ending 30 June 1945 the renegotiation of war contracts continued to have an important effect upon the prices paid in the procurement of supplies and services by the War Department. By 30 June 1945 the War Department had obtained refunds of excess profits aggregating \$4,872,000,000. Of this sum, \$2,594,000,000 was refunded during the fiscal year 1945. If 70 percent of the total had been recovered in taxes, the net refund to the Federal Government on War Department contracts still amounted to \$1,462,000,000. The refunds did not include price reductions on existing contracts which, up to 30 June 1945, totaled over another 3 billion dollars. These price reductions added to actual refunds aggregated nearly 8 billion dollars realized from renegotiation activities. Even this figure did not reflect the full benefit of the administration of the Renegotiation Act, since its chief advantage was in the effect it had in obtaining lower prices on future contracts.

Renegotiation activity was directed by the War Contracts Price Adjustment Board, an interdepartmental agency representing various procurement services of the Government. In turn, a War Department Price Adjustment Board established policies for the department. The chairman of this board also served as Director of the Renegotiation Division, ASF.

Renegotiation was conducted on the basis of the fiscal year's business of a contractor, which usually coincided with a calendar year. Renegotiation records were accordingly kept on the basis of recoveries on the business of a contractor in a given calendar year. Recoveries to 30 June 1945 were realized primarily on business done in the calendar years 1941, 1942, and 1943. Total recoveries on 1944 business came only to some 80 million dollars by 30 June 1945.

For each of the calendar years 1942, 1943, and 1944, 60,000 cases were examined. For business done in 1942, 20,409 cases were assigned for renegotiation within the War Department, on 1943 business the number of cases was 23,148, and on 1944 business, 16,223 cases. The cases of contractors assigned for renegotiation were disposed of either by an informal cancelation or a formal clearance agreement when detailed examination disclosed no excessive profits, or by determination of excessive profits through a bilateral settlement agreement or by a unilateral order. By June 1945, 99.9 percent of the 1942 cases had been completed by the Army Service Forces. The record of the Chemical Warfare Service, the Corps of Engineers, the Signal Corps, the Medical Department, and Transportation Corps was 100 percent. In the Ordnance Department only 4 cases out of 4,342 had not been completed. By June 1945, 99.4 percent of the assignments to renegotiate 1943 business had been completed. About 55.4 percent of the cases on 1944 business were finished by June. All 1944 business was expected to be completed in November 1945.

The total cost of renegotiation activity in the War Department from 28 April 1942 to 30 June 1945 was 19.3 million dollars. The personnel engaged in renegotiation reached a peak of 2,112 on 31 December 1943. This had decreased to 1,645 persons by 30 June 1945.

There were few important changes in renegotiation during the year. The rules, principles, and procedures of renegotiation were better

understood both by contractors and Government personnel. The administration of the Renegotiation Act proceeded with much less difficulty than was encountered in its earlier stages. The War Contracts Price Adjustment Board served effectively to achieve close cooperation on policies and activities among the various renegotiation agencies.

On behalf of the interdepartmental agency, the War Contracts Price Adjustment Board, the Renegotiation Division in ASF Headquarters issued assignments to the six Government agencies operating under the Renegotiation Act and recorded the progress in handling cases as well as the records of results achieved. These operations involved accounting for over 90,000 assignments. Cost of this work was included in the general cost of renegotiation activity for the War Department. Records were kept which permitted readily available information about the renegotiation assignment of all contractors and about the progress reports have been prepared for the benefit of the War Department and of the other five agencies.

Under the Renegotiation Act of 1943, renegotiation of war contracts was to terminate on 31 December 1944 unless the President extended it another 6 months. This the President did by proclamation on 14 November 1944. Legislation was introduced in Congress before the end of the fiscal year extending the termination date to 31 December 1945. The measure was approved by the President on 30 June 1945.

Contract Termination

On 1 July 1944 the Contract Settlement Act was approved by the President to become effective 3 weeks later. The principal effect of the law was to confirm the basic termination policies and procedures which had already been adopted and put into effect, particularly by the War Department. The Act had a threefold purpose: the prompt and equitable settlement of termination claims, the prompt removal of termination inventories from war plants, and adequate interim financing for war contractors pending settlement of their termination claims.

The new act authorized settlement by agreement or by unilateral determination, but made it clear that settlements should be made by agreement to the greatest possible extent. All settlements with prime contractors and subcontractors involving payment in excess of \$50,000 required review by a board of three or more members to determine the reasonableness of the agreement. The law also provided for the payment of interest at the rate of 2½ percent on the amount of settlements beginning 30 days after the date fixed for termination. To protect contractors who regarded themselves as aggrieved by any terminations, a complete appeal procedure was established providing for appeals to a special appeals board established by the act and also for suits in the Court of Claims or in the U. S. District Court. The act also gave particular attention to the problems of subcontractors by providing that the same principles of fair compensation in the termination of prime contracts should also be applicable to subcontractors. In addition, the act authorized contracting agencies to limit their review of settlements made by prime contractors with subcontractors to the maximum extent compatible with public interest. The direct settle-

ment of claims with subcontractors was authorized as well as the settlement of all termination claims of a war contractor by one contracting agency—the so-called company-wide settlement. To protect subcontractors whose prime contractors were in financial difficulties, the act authorized the supervision or control of payments made to subcontractors, direct settlement where necessary, and direct payment to a subcontractor despite the fact that such compensation had already been paid as part of another settlement as long as the payment was justified by equity and good judgment. In addition to the provisions on removal of termination inventory and for interim financing, the act contained a number of miscellaneous provisions requiring contracting agencies to give as much advance notice of terminations as possible, absolving Government personnel of any liability in the absence of fraud, authorizing Government personnel to assist contractors in preparing termination claims and in obtaining interim financing, and requiring the preservation of records for 5 years. A comprehensive revision of Procurement Regulation 15 governing the settlement of terminated contracts was issued by the War Department on the same date that the new act took effect, 21 July 1944.

The passage of the Contract Settlement Act gave new impetus to previous informal efforts between the War and Navy Departments to take joint action on termination policies and procedures. With the law providing the basic framework, the two departments prepared a joint termination regulation which was issued on 1 November 1944. This regulation clarified and consolidated all outstanding Army and Navy directives and incorporated additional material proved desirable by experience. The work involved mainly the solution of mutual problems rather than the reconciliation of any differences in point of view. At the same time that the joint termination regulation was issued, a joint termination accounting manual was also prepared. The regulation covered every phase of contract termination from the initial preparation for a cut-back to final settlement and disposal of termination inventory. Thereafter, any contractor working for both the Army and the Navy had to look only to a single document to determine the fundamental rules and policies governing the settlement of his contract. He did not have to follow two sets of instructions or two sets of forms. Moreover, the departments agreed to make no interpretations of the joint regulation except after mutual discussion and agreement.

There were a number of important developments in the handling of contract terminations by the War Department during the fiscal year. For one thing, greater emphasis was placed upon no cost settlement. This method of settling claims was favored after the issuance of two rulings by the Treasury Department in September and November 1944, which made it clear that a contractor's waiver of claim for compensation for the termination of a war contract would not affect the deductability of expenses, depreciation, or amortization in connection with a terminated contract. In accordance with the spirit of the Contract Termination Act, more attention was given to providing adequate interim financing to both prime contractors and subcontractors. The use of funds on deposit in an advance payment for termination purposes was authorized. War contractors might obtain direct loans from the Government with which to make interim or final payments to their subcontractors. Immediate partial payments of at least 75 percent

and not more than 90 percent of the amount certified by a contractor as due on account of his own costs were also authorized. The legal authority to negotiate the settlement of terminated cost-plus-a-fixed-fee contracts were settled by the Contract Termination Act and new procedures for handling these settlements were worked out by the War Department and the General Accounting Office.

Another important development was the delegation of authority to war contractors to settle finally the termination claims of their sub-contractors where such claims were less than \$10,000 before deductions of disposal credits. All the technical services of the ASF relied to a great extent upon these delegations. In addition, contractors might make final settlements with their subcontractors where the net claim was less than a thousand dollars and the subcontractor agreed to dispose of all termination inventory.

Termination settlements were also speeded up by the publication of Regulation No. 7 of the Office of Contract Settlement providing a detailed statement of the principles to be applied in arriving at fair compensation for the termination of war contracts. This regulation contained the first clear and unequivocal statement that the profit which a contractor would have received under a formula might be allowed in negotiated settlement. Also the standard settlement proposal and inventory schedule forms issued by the Office of Contract Settlement proved most helpful in use. A separate form was employed on settlement proposals for less than a thousand dollars.

A consolidated termination program was established during the year to facilitate settlement work in cases where a contractor had many customers including other contractors or contracting agencies. Under this program the contracting agency with the greatest share of the business of that contractor assigned accounting and property disposal personnel to the plant to review all termination costs.

On the basis of the War and Navy Departments' experiments in company-wide settlement, the Office of Contract Settlement in June 1945, issued a regulation providing for limited extension of the program. Under the regulation one contracting agency might make a settlement under all terminated war contracts including prime contracts and subcontracts. This procedure will greatly facilitate settlement of subcontract termination claims.

On 26 July 1944 the Readjustment Division distributed instructions to technical services and the Army Air Forces on advance negotiations and agreements of charges with contractors. It was requested that experimental negotiations be started with contractors. Then, in order that the greatest amount of planning might be accomplished in a short time, to aid the settlement of mass terminated contracts upon victory in Europe, 183 war producers were divided among the seven technical services and the Army Air Forces. This selective program of termination planning was presented to the technical services on 8 August 1944 and to the Army Air Forces on 9 August 1944. Contracting offices were directed to discuss the problem fully with each of the assigned manufacturers and provide specific answers to their questions. The objective was to agree in advance on all questions which could be determined prior to the date of individual or mass contract terminations. Fundamentally, all possible aid was given to each manufacturer so that a specific plan of procedures could be

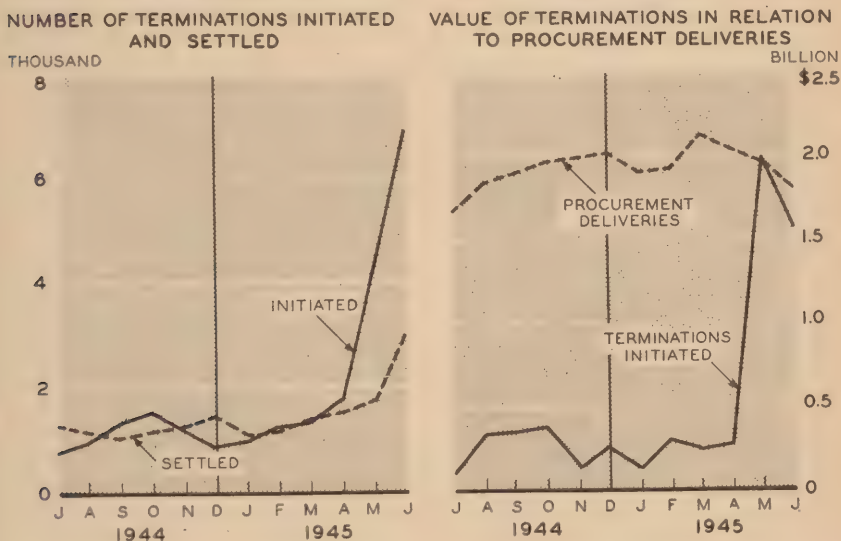
adopted within the manufacturers' own organization. The new program was combined with the one previously started on 26 July and came to be known as the Pretermination Planning Program.

A mimeographed pamphlet was distributed on 23 October to serve as a guide in conducting the program. (See sec. III, ASF Circular 274, 1945.)

The first formal binding pretermination settlement agreement specifying the methods of computing fair compensation was consummated on 26 October 1944 by the Quartermaster Corps with Botany Worsted Mills. Considerable effort was expended by all procurement offices during the year to conclude both formal agreements and informal understandings.

During January, February, and March 1945, the planning continued, even though production problems commanded the first atten-

ASF CONTRACT TERMINATIONS



tion of all field procurement offices. One important step in this period was the development of a settlement agreement to cover over-all company operations and an agreement for common subcontractors. Agreements with Allis-Chalmers Company and the American Rolling Mills Company were examples of the development work which went forward during this period.

On 2 March 1945 the commanding general directed each technical service to intensify its pretermination planning. As a result, increasing attention was given to the terminations expected with the defeat of Germany. The number of informal arrangements between contracting officers and contractors expanded severalfold. These arrangements were of great importance in handling the termination load beginning the last of April 1945. By 30 June 1945 there were 1,028 informal arrangements and 771 formal settlement agreements in effect within the War Department.

The Army Service Forces terminated 22,899 contracts during the fiscal year 1945. Eleven thousand of these were initiated in the last 2 months of the year—May and June 1945. Some 6,000 contracts were terminated in the first 6 months of the year and about 5,000 from January through April 1945. The commitment value canceled by terminations during the first 6 months amounted to 1.5 billion dollars, while in the last 2 months it came to 3.6 billion dollars.

There were 3,000 contract terminations in process of settlement at the beginning of the year. Some 17,195 terminations were settled during the year, leaving a backlog of 8,700 cases on 30 June 1945. Actually, most of this backlog arose from the great number of terminations made in May and June 1945. At the end of March there were only some 2,100 terminations in process of settlement. The number of settlements made in June 1945 reached a peak of 3,000. The record on commitment value in terminations was better than that for the actual number of contracts terminated. The commitment value of terminations initiated during the year was 6.03 billion dollars, while the commitment value of settlements was 6.05 billion dollars. This meant that the commitment value of terminations in process of settlement at the end of the year was less than at the beginning.

The number of contract terminations that had been in process of settlement 4 months or more was at a new low on 30 June 1945—only 82 cases compared with 342 cases on 28 February. The commitment value of contracts in process of settlement over 4 months was 591 million dollars on 30 June, compared with 1.1 billion dollars on 28 February.

Contract terminations were relatively small compared with monthly procurement deliveries to the ASF until VE-day. They reflected adjustment resulting from changes in types of equipment and oversea demands. For this reason, the commitment value of contracts terminated in May 1945 exceeded the value of total deliveries in that month; in June, terminated commitments were only slightly less than total deliveries.

The full volume of activities resulting from the procurement switch to a one-front war at the end of April was not completely apparent by the close of the year. The bulk of the terminations had been made, but a large proportion of contractors' inventory had not yet been determined and most claims were not yet received.

The inventories accumulated from VE-day terminations as reported to contracting offices greatly increased in May and June. For May, 34 million dollars was reported in comparison with 21 million in April. In June inventories of 41 million dollars were reported. These figures did not represent the full volume of termination inventories. The War Department cleared inventories amounting to 26 million dollars from war contractors' plants in April, 27 million dollars in May, and 34 million dollars in June. On 30 June only 32 of the 4,600 inventory lists on hand for clearance had been on hand for more than 60 days and the cost of property not cleared from these lists came to only 1.6 million dollars.

Another part of the program for handling contract settlements as promptly as possible was to provide adequately trained personnel to do the job. The responsibility for this training was vested in the first place with the technical services and their procurement offices.

To assist them in this training, various materials were provided by the Readjustment Division and specialized courses were established in the Army Industrial College, the Army Finance School, and The Judge Advocate General's School.

Training courses for both Government and contractor personnel emphasized the basic policies for contract termination, the procedures and regulations in effect, and the objectives to be realized. Trainees also reviewed actual case problems. By 30 June 1945 approximately 3,500 students from the Army Air Forces and the Army Service Forces had taken the termination courses offered by the Army Industrial College. Another 2,500 students had graduated from the Fiscal Director's School and 500 from The Judge Advocate General's termination course. In addition, about 800 officers and civilians were trained in an AAF school at Vandalia, Ohio.

Conferences of industrialists and of military personnel helped acquaint contracting personnel with termination problems. A salvage officer training conference was held in October 1944; three regional conferences were also held to acquaint procurement personnel with the problem of training contractors' staffs with termination procedures; two contractors' conferences were held on the West Coast in July 1944. A number of universities also cooperated in providing instruction to contractors' personnel with the assistance of Army and Navy procurement officers. Nearly 2,500 contractor personnel representing some 1,200 firms received instruction from eight different universities. The Smaller War Plants Corporation sponsored about 125 meetings of subcontractors who usually did not have any direct contract with Government procurement agencies. This work helped bring the attention of smaller plants to their place in the termination program. Many of the technical services of the ASF held their own course of instruction for contractors. The most successful type of training course developed was a 4-hour training program, conducted by procurement personnel giving instruction to small groups of contractors of not more than 50 at a time on the fundamentals of filing claims and filling out the required forms. Up to 30 June 1945 more than 800 meetings of this kind had been held covering approximately 30,000 contractor personnel representing 20,000 separate firms. In addition to this basic 4-hour course, a 4-hour technical session on accounting was introduced at the beginning of the year. In this half-day meeting war contractors and Government personnel participated in an organized discussion of termination accounting problems which, for lack of time, could not be covered in the basic session. Both of these courses were intended for the small war contractors with only limited contact with any of the procurement agencies.

Many courses on termination were sponsored by major contractors as well as by the National Association of Manufacturers, trade associations, chambers of commerce, and other groups. These courses were intended to reach many thousands of smaller subcontractors. Assistance and advice on such work was provided by ASF Headquarters and by technical service procurement offices.

All courses made use of many different materials made available by the War Department, including the Joint Army-Navy Manual on Contract Settlement and Plant Clearance, the Army-Navy Contractors Guide, the Joint Termination Regulation, the Contract Settle-

ment Act, the Joint Termination Accounting Manual and publications and regulations of the office of Contract Settlement.

Procurement Cooperation With the Navy

In November 1944, the Secretary of the Navy and the Under Secretary of War appointed a committee of one Navy officer and one Army officer to conduct a study on existing coordination in the procurement field between the War and Navy Departments, and to recommend additional desirable coordination. This committee requested various staff divisions and all of the technical services of the Army Service Forces to prepare reports about existing cooperative relationships on procurement matters with the Navy Department. Altogether, some 26 studies were prepared by staff divisions and 12 by technical services. These studies were published as Volumes II and III in the final report of the committee.

The ASF review of procurement operations on behalf of the committee appointed by the Secretary of the Navy and the Under Secretary of War revealed widespread formal and informal relationships between the two departments. A Joint Army-Navy Committee on Specifications was created by the Commanding General of the Army Service Forces and the Chief of Procurement and Material, Department of the Navy, on 22 December 1942. By the first of January 1945, there were 155 joint specifications for the two departments. Some covered a wide number of end items. Common specifications were also achieved through the Federal Specifications Committee. The Purchases Division of the Army Service Forces and the Procurement Branch in the Office of Procurement and Material of the Navy consulted frequently on procurement policies and pricing matters. An Army and Navy Patent Advisory Board recommended that certain applications be classified as secret by the U. S. Patent Office. After the passage of the Contract Settlements Act of 1944 the Readjustment Division of ASF Headquarters and the Office of Procurement and Material agreed upon a joint termination regulation providing a standard policy and procedure for both departments in the termination and settlement of contracts. Substantially uniform insurance policies had been developed between the two departments. As a part of the procedure for settling terminated contracts, audit coordination committees were set up by the two departments in various localities. By 1 January 1945 the departments had assigned some 31 large contractors to one or the other to perform all accounting work in the settlement of terminated contracts. As early as 31 March 1943 the two departments adopted a joint statement of principles to govern the renegotiation of contracts. In addition to the joint representation upon the War Contracts Price Adjustment Board established in February 1944, the Price Adjustment Boards of the War Department and of the Navy Department included a member of the other department. Thus substantial uniformity in policies and procedures were realized between the two departments.

In December 1944, the two departments created a Joint Army-Navy Liquidation Commission to handle the disposal of surplus property overseas. In addition, property excess to the needs of one department was reported to the other department before it was declared surplus.

The most continuing close relationships on procurement matters

were realized between the technical services of the Army Service Forces and the procurement bureaus of the Navy, particularly at the level of the various technical committees conducting research and development activities. In this way each department shared its technical advances with the other. In many instances joint research projects were undertaken, as with rockets, while in other instances one department performed research projects for the other, as on armor plate. In general, no research effort of one department was unknown to the other, and new types of equipment standardized without the knowledge of other.

In particular fields very close cooperative relationships were developed. The two departments had a very well integrated arrangement for the procurement of both nonperishable and perishable foods; the 33 Quartermaster market centers and the 19 field buying offices of the Quartermaster General purchased on a consolidated basis about 90 percent of the Navy's food requirements. The Navy Department maintained officers in the headquarters of the subsistence staff in Chicago and at about half of the market centers. The Navy was also represented at the Subsistence Research and Development Laboratory. Since the summer of 1942 a central procuring agency operated by the Chief of Engineers had procured all lumber for the Army, the Navy, and the Maritime Commission. A War Department conference group for tractors and cranes with representatives of the Navy, the Marine Corps, the Army Service Forces, and the Army Air Forces had since April 1942, allocated quarterly the output of crawler tractors made available to the military forces by the War Production Board. The Bureau of Supplies and Accounts of the Navy, the Army Air Forces, and The Quartermaster General cooperated closely in the preparation of specifications, the determination of requirements, and in actual procurement operations for the purchase of fuels and lubricants. Landing craft for Army use were purchased by the Navy Department. The Ordnance Department supplied small arms weapons and ammunition, bombs, and aircraft cannon to the Navy. On the other hand, the Bureau of Ordnance provided the War Department with large quantities of rockets and heavy ammunition. Through the Joint Communications Board, the two departments achieved close relationships in the design and in production scheduling of electronics equipment. About 80 percent of all requirements for chemical warfare items were obtained for the Navy by the Chemical Warfare Service. In the calendar year 1944 about 46 percent of Navy requirements for wheeled vehicles were bought by the Ordnance Department. All tanks and certain other combat vehicles used by the Marine Corps came from the ASF.

At the same time, the studies made jointly by the Army Service Forces and the Navy Department indicated the need for much closer working relationships in a number of different fields, particularly in item identification, in the calculation of supply requirements, in the use of contract forms, in establishing procedures governing contract appeals and modifications, in handling royalty adjustments on patents, in establishing policies on the financing of war production, in expediting production, in determining the need for and locating new production facilities, in inspection, in packing, and packaging, and in conservation practices to save critical raw materials.

The Under Secretary of War directed the Commanding General on 22 December 1944 to create a joint purchasing agency with the Navy for procuring medical and surgical equipment and supplies, to establish a Joint Army-Navy Specifications Board for Medical Supplies, and to create a Joint Inspection and Laboratory Service. As of the end of the year a subcommittee established by The Surgeon General and The Surgeon General of the Navy was working on the development of a plan for the operation of a joint purchasing agency to be located in New York City. A joint catalog branch and a joint specifications branch were already functioning under the general direction of an Army-Navy Medical Material and Specifications Board. An item-by-item analysis and comparison of the medical items handled by the two departments was under way. The creation of a Joint Inspection and Laboratory Service was also being studied, but arrangements for its establishment were not completed.

On 6 January 1945 the Under Secretary directed the Commanding General to place Army and Navy procurement officers together in the same offices for the purchase of standard stock items, textiles, clothing and shoes, and athletic equipment. A study was to be made of all critical items to determine which might be adaptable for coordinated procurement of single procurement by one service and to bring about a higher degree of coordination in specifications, inspection, and expediting for these items. A Joint Army-Navy Purchasing Office was established in New York City by the Quartermaster General and by the Bureau of Supplies and Accounts before the end of the year. The Navy had transferred its textile, clothing, and shoe procurement programs to this office and the Quartermaster General had transferred the procurement of and wool textiles, women's garments, knit goods, and duck and webbing. Plans were also made to transfer the procurement of athletic equipment, rain wear, equipage and cotton and wool garments during July.

On 11 January the Under Secretary directed the establishment of a centrally located Army and Navy Petroleum Purchase Agency. Such an agency was established in Washington, D. C., and had begun operations by 30 June. Principal attention was given to concentrating procurement operations in this office, but studies were also under way about the possibility of enlarging the scope beyond the immediate purchasing field.

On 9 February 1945 the Under Secretary directed that additional efforts be made to coordinate procurement between the Corps of Engineers and the Bureau of Yards and Docks, particularly in the field of specifications. By the end of the year 792 Navy specifications had been provided the Corps of Engineers and 724 Engineer specifications had been furnished to the Bureau of Yards and Docks to determine the possibility of uniform specifications. Agreements had already been reached to use Army paint specifications by both departments as well as Army camouflage colors. Close relationships had also been established between the two procurement agencies for the exchange of information on cutbacks, excess supplies, and new procurement. A Joint Engineer-BuDocks Procurement Committee was established with numerous subcommittees, all of which were very active. One result of this interrelationship was the supply of about 1 million dollars worth of spare parts to the Navy by the Army. Some

seven manufacturers making spare parts for both departments were under study to determine the feasibility of single procurement by one or the other service.

As a result of the approval by the Under Secretary of War and the Assistant Secretary of the Navy of the recommendation to make further studies of possible coordination in the procurement of ordnance material, a number of actions were taken. Procurement was centralized in one or the other department for such items as 40-mm ammunition, 20-mm aircraft ammunition, aluminum and magnesium powder, and others. Further coordination was under consideration.

On 11 January 1945 the Under Secretary directed the Commanding General to establish a Joint Marine Procurement Board with the Chief of the Bureau of Ships, Navy Department. This board was established and had begun some work to develop joint specifications and standardized designs.

An order of the Under Secretary on 10 February 1945 established a joint Army-Navy Packaging Board to coordinate the activities of the Army Packaging Board and the Navy Packaging Board. By the end of the year 21 joint Army-Navy specifications for basic packing materials were in use by both departments. Some 26 joint packaging instructions were in process of preparation by the two departments for early publication.

To assist in carrying out the recommendations of the joint Army-Navy procurement studies, various contract articles were developed for use by both the War and Navy Departments. These articles were substituted for the articles previously contained in standard Army and standard Navy contract forms. They were to be put into effect by the procurement office in New York City purchasing clothing, textile, and standard stock items and also were to be used in the purchase of petroleum products and fuel.

These and other actions developed closer working relationships between the two departments and their procurement operations. The recommendations contained in the final report to the Under Secretary of War and the Secretary of the Navy were not ordered into effect. The same instructions given to the commanding general by the Under Secretary of War were given to various Navy procurement bureaus by the Secretary of the Navy or by the Assistant Secretary of the Navy.

Chapter 14. SUPPLY OPERATIONS IN THE UNITED STATES

There were no fundamental changes in the supply distribution system in the United States during the fiscal year 1945. Most deliveries by manufacturers continued to be shipped to the various depots operated by the technical services. From here supplies were shipped to ports for movement overseas, or to posts in the United States for issue to troops in training or stationed in this country.

In every respect, the year 1945 witnessed peak supply operations in the United States. The total tonnage received by depots came to 29 million tons, compared with 24 million tons in 1944. The total tonnage shipped from depots was 26 million tons, compared with 21 million tons in 1944. Of this total tonnage shipped, 17.7 million tons went overseas in 1945, compared with 13.5 million tons in 1944. The total line items in requisitions received amounted to 50.5 million in 1945, compared with 45 million in 1944.

The amounts going into storage increased greatly in May and June 1945, after VE-day. Shipments to Europe were, of course, greatly curtailed after Germany's surrender, while shipments to the Pacific could only increase as additional ports and storage facilities were constructed at newly won bases in the Philippines, Iwo Jima, and Okinawa. Many supplies which had previously gone directly to ports from manufacturers now began to go to depots, while the curtailment of deliveries occurred slowly as procedures for cutbacks and termination were put into effect. As a result nearly 1.7 million tons were added to storage in the last 2 months of the year, bringing the occupancy of all types of storage space to a new high.

As shipments increased to the Pacific, and as deliveries from manufacturers were curtailed, the storage situation and the whole supply operation in the United States would be altered. These events lay ahead in the fiscal year 1946.

At the end of the fiscal year, the assignment of specific missions to all depots had been completed. Each depot was given one or more functions to fulfill: the supply of posts (distribution depot), the supply of ports (filler depot), the supply of certain centralized items (key or master depot), and supply of large bulk items (reserve depot). The job in 1945 was to insure that information on missions was disseminated to all interested agencies, and that stockages corresponded with missions. Ports of embarkation had to know the depots of each technical service designated to supply them; posts had to be sure about where to send their requisitions; while many different staff agencies in the ASF, including the Requirements and Stock Control Division, the Distribution Division, the Maintenance Division, and the Storage Division needed exact knowledge about the depot responsibilities.

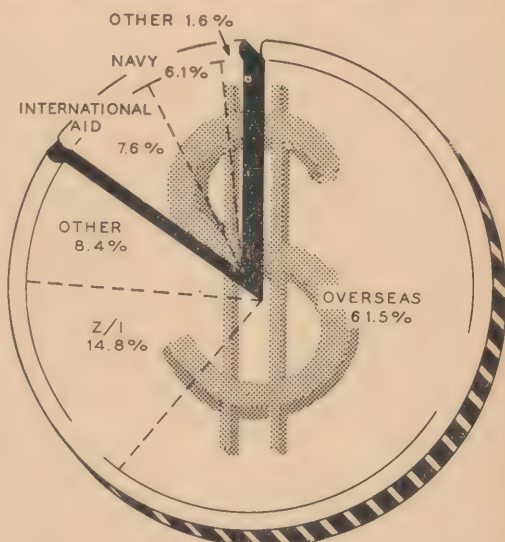
An illustration of the need for exact information about missions was afforded in the surveys of oversea supply procedure made during the

year. It was found that some sections at both the New York and San Francisco ports had not been given explicit information about the initial source of supply on all items. As a result, many filler depots were returning requisitions with notations of other depots to which the extract should have been sent, or were having to send many extracts on to other supply points.

ASF Circular 238, 28 July 1944, rescinded by sec. VI, ASF Circular 359, 1944, directed publication in a War Department Supply Bulletin of consolidated depot mission information under the two main categories of overseas supply and zone of interior supply. But the subdivisions in the first category were by commodity groups, showing for each the depot responsible for overseas supply through a particular

DISTRIBUTION OF PRINCIPAL ITEMS PROCURED BY ASF

1 JANUARY - 30 JUNE 1945



port. In the second part, sources of supply were indicated for each zone of interior installation. This compilation was still inadequate to meet the need for a list of the assigned missions of each depot, since this information could be obtained only by laboriously culling extracts from each commodity section. Accordingly, War Department Supply Bulletin SB 38-3 was published on 16 October 1944, listing in separate sections the depots of each technical service including the technical service sections in the eleven ASF depots, and giving the assigned missions of each. An amended edition was published in March 1945.

Processing of Oversea Requisitions

It has already been pointed out that studies made of the turn-around cycle for overseas supply in the middle of the year revealed delays at several points in that portion of the action cycle which lay within the depot system. While the great majority of delays in meeting the various deadlines in the schedules for filling overseas requisitions were the result of procurement rather than of processing or stock Control failures, there were still enough of these to cause concern.

Before the turnaround cycle studies were begun, steps were taken to improve the reporting of depot operations to ASF Headquarters. A new report was devised and put into operation in August 1944. This report not only contained the statistical data required by the technical service responsible for the depot, but also was designed specifically to police the processing of requisitions as prescribed by two standard sets of instructions, ASF Manual M 411 (Procedure for Processing Oversea Requisitions) and M 414 (Procedure for Processing Domestic Requisitions). Specifically, the report tended to focus the attention of depot commanders on the importance of meeting the time limitations laid down in these procedures. In addition, depot supply procedures were consolidated in a new manual (M 408) published in July 1944.

Since many of the delays in filling oversea requisitions were the result of items not being in stock at the designated sources of supply, ASF staff agencies responsible for supervising depot operations devoted more attention to the accuracy of inventory records. In order to check these, a program of regular physical inventories was instituted, under which depots made physical counts either on a cycle or complete basis every 6 months. This standardized existing practices at various depots. At several depots complete shut-down inventories were taken to correct generally unsatisfactory on-hand data. Simplified inventory adjustment procedures were prescribed in ASF Manual M 408-1, published 15 May 1945, to insure that adjustment in stock records were made correctly. Finally, the continued development of the depot locator system, and the periodic locator survey contributed to the improvement in on-hand data and more accurate physical inventories.

A complete inventory of all principal items under control of the chiefs of technical services was completed in March 1945. This inventory was preceded by a complete locator survey. All depots were visited by personnel from Headquarters, ASF, during or following the inventory period and an audit was made on a spot-check basis. Reports of these inspections indicated generally firm on-hand balances for principal items.

A monthly reporting system was placed into operation toward the close of the fiscal year under which depots submitted data on inventory adjustments to provide a yardstick to measure trends in depot accuracy.

One result of the extensive reexamination of depot stockages made through inventory record control and physical inventories was the removal of much excess, obsolete, and inappropriate stocks from depots. These activities are discussed in more detail later.

In May, the results of these various corrective measures were examined in another study directed at delays in depot processing of oversea requisitions. For this purpose, a number of line items selected by the San Francisco and Los Angeles ports of embarkation were traced through each processing step by the technical service concerned. The cases selected were at least 30 days overdue, and yet had entered the depot system recently enough for current depot practices to be applicable to them. The unusual or "outlaw" cases were selected deliberately, in order to bring to light the various types of delaying actions in current depot processing. For this reason, the samples

could not be considered as representative of the supply performance of depots.

It was found that in 32.4 percent of the sample cases ports of embarkation did not receive a notice of delayed item, although all items included in the sample missed the shipping period for which they were scheduled. Standard procedures in ASF Manual M 411 specified that notice of delayed items were to be furnished the port for all items that could not be shipped to the port by the scheduled date. Unavailability of stock was the greatest cause of delay, as indicated by the fact that 77.8 percent of the sample cases were either back-ordered, extracted to procurement, or both, at some point during processing. This type of delay reflected no discredit on processing performance.

An important point in the processing cycle was that at which the initial source of supply (usually a filler depot), after receiving an extract requisition from the port and being unable to fill it, sent a shortage report to the technical service stock control point for that particular category of item. The stock control point was the very keystone of the whole oversea supply system. Here were maintained central stock records showing the entire national stock status of certain categories of items, and the depots where each item was stored. Thus, if an item were not available at the initial source of supply to which the port extracted the requisition, the stock control point could determine to which point it should be reextracted. By this means, it was possible to avoid the endless process of reextracting to one depot after another which had been the bane of oversea supply operations in 1943.

The study of delayed, or "outlaw," cases revealed that there were delays in these instances at least in dispatching shortage reports from filler depots to stock control points. And in some of these cases, shortage reports were submitted to the stock control point by the second and even third depot to which the extract was sent. Accordingly, greater attention was at once given to improving the stock information on hand at stock control points, so that no extracts would be sent to a second depot which did not have the stock on hand. In addition, it was necessary to reduce delays at the stock control point in notifying the filler depot of stock availability at some other place.

The effect of delays in depot processing on the whole oversea supply picture was indicated by the fact that in April oversea line items offered to the port for shipment after the scheduled limiting date comprised 15 percent of all oversea line items offered for shipment. Twenty-three depots in April offered more than 25 percent of April shipments of oversea line items after the limiting date. Again, however, the causes for delay in most cases could be traced back to unavailability of stock.

In evaluating depot performance in meeting oversea supply requirements, several factors became apparent. In the first place, there was less difficulty in processing and meeting oversea demands for the some 1,800 principal military items of equipment and supply provided by the Army Service Forces. In some instances, the productive output was not sufficient to meet the entire demand from both the Atlantic and Pacific theaters in 1945. Then output was divided between the two, or all production assigned one place, as was the case with the M26 tank. In these cases, depots and ports were able to handle

requisitions and shipments promptly. In the second place, however, there were great numbers of requisitions, when counted on a line item basis, for spare parts, particularly for automotive, construction, and communications equipment. Much of this demand, too, could be met promptly, but in many instances the desired spare parts had to be ordered after the requisition was received. Thirdly, oversea theaters also requisitioned items which were not standard pieces of military equipment. In most cases, the ASF tried to supply these too, but necessarily there were delays in shipment.

A new edition of ASF Manual M 411 issued in May 1945, stressed the necessity for a port to have the latest information on initial sources of supply for each group of items and the latest catalogs showing correct stock number, nomenclature, and unit of measure. It emphasized the importance of reducing to a minimum the number of items extracted from initial to secondary sources of supply, and, through proper selection of secondary sources, of keeping extracts from initial sources down to once for any one line item; and of close working relationships between port oversea supply divisions, sources of supply, stock control points, and procurement offices.

Section III, ASF Circular 104, 1945, directed depots to apply to ports for release and routing of shipments as soon after the receipt of a requisition as a reasonable estimate of weight and cubage could be determined, and in any case prior to the limiting date. There was a tendency for depots to delay making application for release and routing until immediately prior to or in some cases just after the limiting date. In addition, the limiting date was defined as the date by which all the supplies called for *must* be available for immediate shipment. Adherence to this time limit was absolutely essential in order that the port might be able to plan its incoming shipments to meet the sailing schedules. Frequently, however, the port was obliged to delay releasing shipments from the depot because of unforeseen changes in the discharge capacity of theaters or in the shipping situation, or because of car shortages, congested traffic, or bad weather.

Depot Problems in Oversea Supply

As mentioned before, in the autumn of 1944 almost 2.5 million ship tons of matériel were standing at anchor in the European theater on some 243 ships. Oversea unloading could not keep pace with arrivals. Supplies then began to pile up in the United States, threatening to glut depots. Many shipments were deferred until European ports were able to discharge the cargo on hand. But many critically needed items had to be culled from the mass of requisitions, given priority processing, and pushed through to the troops. This was a big job for depots, but it was successfully handled. A similar situation developed in the Southwest Pacific early in 1945, during the operations in the Philippines. Over 272 shiploads of matériel were at or en route to Pacific ports. At about the same time, increased port capacity in the European theater drained away the backlog in the simultaneous filling of current and deferred demands.

About the time of the invasion of Okinawa, depots in the United States had to absorb two drastic changes in the flow of supplies. In January, it was decided to reduce shipments through the New Orleans

port in the following March to almost nothing. Readjustment of depot stockages (normally a 3 to 4 months' operation) was accordingly undertaken. In March, however, because of heavy demands on Pacific Coast depots, it became necessary to increase the flow of supplies through New Orleans up to 300,000 tons per month.

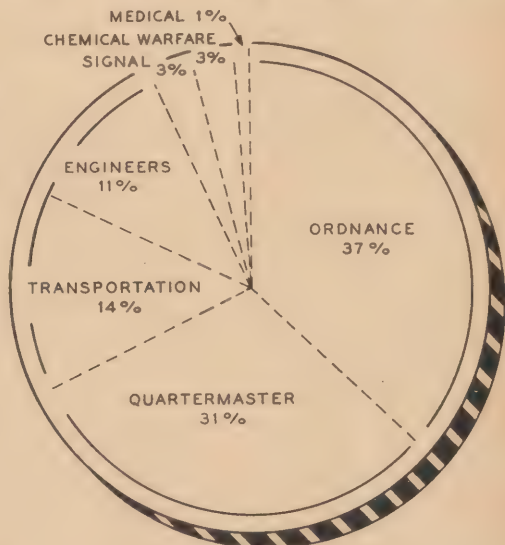
The problem of adjusting inventories for overseas supply was well illustrated by medical supply during the year. By July 1944, 90-day stock levels had been established in all medical depots. After the Normandy beachhead had been established and requisitions began to come in for direct shipment to the Continent, it became apparent that, for many items, a 90-day supply by preinvasion standards would not even fill a single overseas requisition. Remedial action was taken at once, but complete recovery from the initial impact had not been

DEPOT RECEIPTS

AND SHIPMENTS

BY TECHNICAL SERVICE

FISCAL YEAR 1945



achieved by VE-day. With rare exceptions, however, adequate supplies reached all theaters of operation on time, even though some of the extremely large requisitions were not completely filled.

The most critical period came when requisitions calling for direct shipment to the Continent reached their peak. Stock and personnel at the Binghamton Depot, the filler depot for New York port, were far from adequate to meet the unprecedented demand. The New York port was requested, therefore, to forward certain requisitions to The Surgeon General's Office, where they were checked against the consolidated stock status report for stock availability. For items and quantities not available in Binghamton, that depot was instructed to extract the requisition to other depots in which the needed stock was stored. In addition, the Binghamton Depot telephoned The Surgeon General's Office whenever the bulk of an item was too great for it to handle, and thus received the name of the depot to which the requisition should be extracted. As a result of these measures, the large requisitions were handled promptly, and in most instances the stock arrived at the port by the limiting date.

Stock Levels

There was no change in the formal inventory, or stock levels as authorized by the War Department during the fiscal year. The maximum authorized levels remained those set forth in section VIII, War Department Circular 206, 1944—45 days' needs on hand at posts, camps, and stations, except for certain medical supplies, seasonable and bulky items such as heating fuels, or items of minute consumption; and 90 days' needs at depots for distribution overseas and within zone of interior. In addition, a strategic reserve of 90 days was authorized for medium and heavy artillery ammunition, based on War Department day of supply consumption rates, and an additional initial issue reserve of clothing and supplies (excluding subsistence and petroleum products) with a 90-day replacement allowance. There was also a production reserve authorized for certain items for which it was expedient to maintain production beyond normal stockages in order to insure availability of production facilities to meet anticipated future demands.

Experience in the preceding fiscal year, however, had shown that the authorized levels were of less importance than the methods used in translating them into actual quantities of individual items, and in maintaining them. In the first place, under the supply control system, stock levels were realistic estimates of anticipated issues for a given period, based on past issue experience, expected future demands, current stock status, and expected production, rather than the simple application of an average day's consumption to a certain length of time and a certain troop strength. Experience showed, also, that it was not feasible to hold all depots and stations uniformly to a fixed level. Demand varied from one locality to another, as well as from time to time. Accordingly, the ASF stipulated that the authorized levels for depots were to apply to the *aggregate* of all depots under a single technical service. Individual depot levels were governed by the special circumstances affecting the local demands on that depot. Thus, if the over-all stock level of an item was established at 60 days, depot A might carry 30-day stocks, depot B 45 days, depot C 60 days, and depot D 90 days, provided that the sum of these stock levels, expressed quantitatively, did not exceed the sum of expected issue demands of all depots for that item during the next 60 days. This principle was embodied in ASF Manual M 416, 17 November 1944, the standard instructions for depot stock control.

Another principle of supply control, the establishment of all supply computations on an item-by-item basis (except for "secondary" items), also applied to the determination of zone of interior supply levels. Since the supply and demand factors varied greatly for individual principal items, the 90 days' depot level was considered as an absolute ceiling, and computed levels were aimed at whatever *minimum* quantity of an item was necessary to assure satisfactory distribution under current procurement conditions. For some items, moreover, issue demand could not be predicted with reasonable accuracy on the basis of past experience. Stock levels for these were not based on a specified number of days of issue demand, but on a stockpile basis.

In maintaining authorized levels at posts, camps, and stations even more flexibility was needed than for depots. Troop movements in

and out of stations, different times required for the receipt of supplies from distribution depots, and other factors caused station needs to fluctuate widely within relatively short periods of time. At the beginning of the year, current procedures gave flexibility to the determination of station levels through the concept of a "station control level," which was the greatest quantity of an item authorized to be on hand *and on order* at any one time. Since this level included an allowance for supplies in the pipe line, actual stocks on hand were not meant to reach this level. Early in the fiscal year a 60-day control level was established for stations, and this level remained in effect throughout the fiscal year. The 45-day maximum level for stocks on hand prescribed in section VIII, War Department Circular 206, 1944, was not exceeded by this provision, since the additional 15 days was "on order and shipping time." Responsibility for approving station control levels and for supervising their maintenance lay with the various depots supplying the station, although the necessary data and computations were provided by the station commander. The depot was authorized to prescribe a lower or a higher control level for the station, depending on the time normally required for supplies to reach the station from the depot.

There were other elements of elasticity in station levels. Slow-moving items for which there was little or no issue experience were not stocked at all, except for standby or utility items which would be needed in an emergency. Seasonal requirements were to be taken into account in adjusting levels, through instructions given from time to time by chiefs of technical services. Nonexpendable medical items were stocked by the station in accordance with the assigned mission and size of the medical activities involved, and irrespective of any fixed level. Nonperishable subsistence was requisitioned and stocked on a monthly basis only.

Depots maintained close scrutiny over station levels, through periodic inspections and review of reports. On the other hand, stations were authorized to make quantitative revisions in their stockages, subject to subsequent approval by the depot if these revisions were upward. Finally, station commanders were required to review their stock record cards at least once each month to determine the necessity for upward or downward revision of levels.

In practice, this thorough application of the supply control principle of making stock levels at the station level sensitive to the slightest change in the factors shaping demand tended to overreach itself. Studies of the problem of handling returns to stock and excess station stocks, made in the second quarter of the fiscal year, brought out that the frequent adjustment of levels of individual items upward or downward by a few pieces involved more paper work and shipment of inconsequential quantities back and forth between depot and station than was warranted. Such adjustments, even when multiplied by the total number of stations in the zone of interior, scarcely affected the national stock level. A third edition of TM 38-220, Stock Control Manual for Stations, 10 May 1945, cautioned station commanders not to make minor or inconsequential adjustments to reflect purely temporary or nonrepetitive demands. The difficulty, then, lay not in policy or instructions, but in the tendency of station commanders to interpret these too literally. Moreover, station supply officers tended

to adjust levels only on the occasion of the periodic visits by depot representatives. Action was being taken to correct these difficulties at the close of the fiscal year.

Authorized depot levels, section VIII, War Department Circular 206, 1944, were 90 days' estimated demand. At the end of August, however, the commanding general directed that stock levels for principal items would not exceed 60 days' issue demand without specific authorization. Certain items were reduced as low as 45 days. For secondary items, stock levels were normally to be established at a maximum of 60 days' issue demand, with possible revisions by chiefs of technical services under an absolute ceiling of 90 days' issue demand. For secondary items whose issue demand varied so widely as to preclude advance estimates, or for which no issue experience was available, stockpiles were to be established. The criterion used for stockpiling was the amount needed for sudden or unpredictable issue demand pending additional procurement, while relying as far as safety permitted upon productive capacity.

One more major development affecting zone of interior stock levels should be mentioned. In June 1944, a plan was under consideration at ASF Headquarters to eliminate all intermediate supply points between depots and stations, such as ordnance service command supply points, and to consolidate supply activities among stations. This involved a system of station supply in which some stations would maintain normal stocks, while others would maintain limited "model" stocks up to 15 days of supply of fast-moving items, while drawing on designated nearby stations for certain categories of items. The latter type of station was known as a "satellite" station. This plan was put into effect on 15 August 1944. Model stock procedures were authorized only for individual and combined maintenance shops, water transportation division, satellite installations based on other stations, reception stations, staging areas, replacement wings, prisoner of war processing stations, and internment camps. The advantage of using model stocks lay in the fact that individual issues were not posted, replenishments being made periodically up to the original level by means of separate inventories. Stock control procedures were thus simplified and most of the normal supply paper work eliminated. The main purpose was to free certain types of installations from the burden of reporting and property accounting involved in normal supply operations.

While model stocks were authorized for satellite stations, the two were not necessarily associated with one another. Satellite stations might draw part of their supplies from a model stock, and part by requisition from the parent station. Part, also, might be obtained by normal methods direct from a depot. The model stock, however, was not permitted to exceed 15 days' supply and was considered a part of the parent station's stock level, not an addition to it.

The system of parent and satellite stations had been applied to the supply of perishable subsistence as early as February 1944, as an adjunct of the Quartermaster market center system. Section VII, ASF Circular 139, 1945, brought the parent-satellite system into the whole station supply machinery as part of a program to consolidate supply activities and reduce the number of stations based on depots for supply. Elimination of intermediate supply points was

accomplished in July 1944. The result of this whole development was reduction of supply stocks in zone of interior by the 45 days of supply formerly stocked at intermediate supply points. At the close of the fiscal year, there remained only two levels of supply for any item stocked in the continental United States, a depot level and a station level.

Disposition of Stocks at Inactive and Surplus Stations

In January 1945, new procedures were established for disposition of supplies and equipment on hand at ASF managed posts declared inactive or surplus as troop strength in the United States declined. In general, the purpose of these procedures was to effect a prompt and orderly transition of the station to its new status, by making the necessary inventories of stocks on hand, classifying and disposing of excesses, and establishing the caretaking detachment and the supply facilities under which inactive stations were to operate pending their subsequent utilization. When an installation was declared surplus, the procedures provided for removal of stocks in preparation for turning over the installation to the Chief of Engineers or to some other agency.

Distribution of Vehicles

Because the pool of motor vehicles available in the United States for administrative uses was steadily declining, a new War Department policy was issued in December 1944. Tables of Allowances for stations thereafter did not include motor vehicles for station operations. Instead, motor vehicles were issued to the three major commands by the Commanding General, Army Service Forces. The change applied mainly to Army Ground Forces installations, since administrative vehicles were already being supplied by the ASF at Class I, III, and IV installations. Vehicles for administrative use by AGF activities were furnished from station motor pools operated by ASF station complements; when this was not feasible, service commanders were directed to establish pools of vehicles to be operated directly by AGF activities. This procedure resulted in an over-all reduction of the number of vehicles in use and released a large number of critical tactical vehicles employed by Ground Forces units for administrative purposes. No additional vehicles were issued to service commands to meet the new demand from the Ground Forces.

The responsibility for determining the need for administrative vehicles at all stations in zone of interior was transferred from service commanders to the Chief of Transportation for Class I, II, and IV installations, and to the Commanding General, Army Air Forces, for AAF installations. In addition, the War Department instituted a method of bulk allotment to the AAF and the ASF by directing both commands in War Department Circular 139, 1945, to submit requirements for administrative vehicles to the War Department for approval.

Supply to Alerted Units

There were no important changes in the system for station supply of troop units alerted for oversea movement. The large outflow of divisions and other units was handled without any particular diffi-

culty. Depots and stations cooperated to get all equipment in the hands of troops before they moved into staging areas. Special packaging teams in each service command made the rounds of particular posts to help troops crate, waterproof, and mark equipment for shipment to ports. Some items, as already explained, were assembled from depots at the Elmira Holding and Reconsignment Point, and were not actually delivered to a unit until its arrival overseas.

The shortage of combat serviceable clothing during the winter led to a restriction on its issue to the period immediately before troops left for overseas. Station inventories were not maintained for this clothing so that it was available only at the places where troop units were making final preparations for departure.

The number of critical items whose issue in zone of interior was carefully controlled was reduced during the year from 361 to 184. Troops in training continued to receive only up to 50 percent of the allowances for these items. The number by technical service was as follows:

<i>Service</i>	<i>1944</i>	<i>1945</i>
Ordnance.....	55	13
CWS.....	4	0
Ammunition.....	9	0
Transportation.....	38	19
Signal.....	128	44
Medical.....	15	0
Quartermaster.....	9	41
Engineer.....	103	67
Total.....	361	184

Stock Control

The most important development in the fiscal year in the stock control field was the emphasis placed upon the stock control point as the key place in the distribution system and in the supply control system. Responsibility for control of ASF supplies was placed on the stock control point, where previously it had been shared by the depot. While depots continued to provide much of the source data required for supply control computations and the distribution and redistribution of depot stocks, the stock control point became responsible for the computation of demands, the establishment of the national stock level, the consolidation and recording of current resources, the adjustment of stocks among depots, maintenance of a master stock locator record, the projection of future resources, and finally the determination of requirements. Toward the end of the fiscal year, supervision over stock control points was greatly tightened. More emphasis was placed upon expediting review of secondary items to modify or cancel procurement. Action to determine and dispose of excess stocks of secondary items was accelerated. A monthly reporting system by dollar categories was developed as a management tool to insure closer control of procurement quantities for these items. The program for elimination of slow-moving and unauthorized items from depot stocks was continued.

Stock control methods at depots were standardized and consolidated during the year. ASF Manual M 416 (Stock Control for Depots) was published 17 November 1944.

The problem of stock control for repairs and utility property presented difficulties arising from the peculiarities of this type of property. A field study was made of the problem, and detailed procedures for disposition and utilization of excess repairs and utility property were published in ASF Circular 282, 29 August 1944. Under these procedures most service commands made good progress in the course of the fiscal year in declaring excess repairs and utilities property available for redistribution; station inventories were greatly reduced in money value.

Early in June 1945, section V, ASF Circular 209 prescribed procedures for operation of service command repairs and utilities warehouses. These warehouses were designed to provide central storage for certain items, thus permitting a reduction of station stocks.

Returns to Stock and Station Excesses

The movement of the vast bulk of the Army overseas, and the shift in procurement and supply from initial equipment of an expanding Army to replacement of existing equipment were the two major factors in ASF supply operations in the fiscal year 1945. To these was presently added a third—the imminence of redeployment for a one-front war in the Pacific. One resulting problem in zone of interior was that of handling supplies and equipment returned to stock.

Units departing for overseas customarily turned in the great bulk of their equipment at their home station, obtaining new essential items then or later. Upon the station supply officer fell the staggering burden of identifying, classifying, and segregating this matériel. After renovation of the repairable items for which facilities were available at the post, the station then had to determine the degree of serviceability for each item. Since troop strength in zone of interior was on the decline, virtually all the serviceable matériel produced by this processing was excess to the needs of the station and, under current regulations, was supposed to be forwarded to depots for disposition. The problem had two aspects: the physical handling, classification, and repair of the matériel, in order to restore as much serviceable property as possible to supply channels; and the inventory control involved in transferring the matériel from unit to station and to depot stock records, and finally integrating it into the national stock control records and the supply control system.

The handling problem had its origin in the haste with which the departing units dumped their equipment into the hands of station supply officers. In theory, each item was duly identified and noted on a turn-in slip when released, but in practice the unit supply officers had neither the time nor the technical knowledge to identify and tabulate each item. Indeed, there were a few occasions when units dumped quantities of used equipment on a nearby farm or even in a lake in order to evade the responsibility of identifying and sorting it. In consequence, much equipment was released and accepted without turn-in slips, and even more was recorded only in roughly estimated quantities. Classification of all this matériel within each service command presented various difficulties. Segregation of obviously unrepairable matériel was relatively easy, but to determine to which category of serviceability an item belonged, or even whether it would

be more economical to repair it than not, called for a considerable degree of both judgment and technical knowledge.

Some technical services required that certain items—for example ordnance vehicles, signal electronics equipment, various engineer items—either be forwarded without classification to a depot or repair shop, or be held at the station unclassified until it could be inspected by qualified officers who visited the stations periodically. Classification was closely bound up with repair and reclamation. Many items could not be classified initially without a technical inspection at the shop. But the burden of reclamation for turned-in property soon mounted beyond the capacity of station shops, which were originally designed for the relatively small-scale job of repairing matériel for local users. Reclamation of returned stock was a project different in character as well as scope, involving production-line assembly techniques and, in most cases, more rigid standards, since the purpose was to restore maximum amounts of equipment to depots for possible oversea use. The backlogs of returned stock awaiting repair for return to stock soared to high figures. At one station, for example, the quartermaster clothing and equipage shop, with an average capacity of about 60,000 pieces per month, had built up a backlog of about 1,200,000 pieces, and the monthly rate of turn-in far exceeded the shop capacity. Service commands redistributed shop overloads, and there was some sharing of the burden among the service commands, but backlogs still mounted.

The whole task of repair was hampered by a lack of central direction above the station level. In the case of vehicles, for example, while some service commands had established pools at selected stations with monthly overhaul quotas, the repair facilities were not equipped to specialize and the work was therefore performed by "garage" instead of production-line methods. Reclamation of vehicles and of several other categories of equipment was complicated also by the problem of spare parts. Parts were necessarily requisitioned in advance on the basis of estimated needs, and here again the dispersion of unspecialized facilities resulted in maldistribution and waste of spare parts. Shops naturally tried to keep an ample stock of parts on hand to circumvent the inevitable delays in resupply, with the result that stocks accumulated in some places.

These shortcomings in classification and reclamation activities at the station level tended to throw the whole problem up to the depot level. Depots were reluctant to accept property turned in by stations as serviceable, and automatically subjected all such stocks to thorough inspection, reclassification, and repair. The condition of much of the property received from stations amply justified these precautions, but the result was a complete duplication of processing already done at the station. At Ordnance arsenals, for example, all small arms returns, regardless of stated condition, were completely remanufactured. Repair standards at depots were also higher than at stations. Some of the technical services, notably Ordnance, Signal, and Engineers, recognized the inadequacy of station repair facilities and provided for the automatic return to depots of equipment turned in at stations. For example, all Signal Corps depots in July 1944 began to specialize on the repair of equipment for return to stock. Posts were directed to return excess quantities of turned-in equipment and to concentrate

solely on repairing items in local use. Depot shop priorities were then established on the basis of supply status. Commercial shops were used to supplement depot shops.

Like the problem of handling and repair, that of stock control also originated in the circumstances under which equipment was originally turned in. The shortcomings of the unit turn-in slips were passed on to the station unserviceable property record and to the monthly station reports on shop operations. At each reporting echelon it was necessary, in practice, to make arbitrary adjustments in balances. The sheer volume of reporting was beyond the bookkeeping facilities of most stations. In the face of this difficulty, reporting officers attempted to concentrate on major and critical items, making their own determination of what was important. In some cases, the minimum list of items published by Maintenance Division, ASF, for Monthly Progress Report purposes comprised the only items reported. The net result was a monthly report of unserviceable property which, for supply-control purposes, showed only a part of the supply assets.

Similarly, the inaccuracies of reporting reached cumulative proportions in the monthly reports of excess stocks submitted by stations to depots. At the depot, these reports on excess stocks were important as the basis for suggesting adjustments in station inventory levels. Excess station stocks, if usable again, should be added at once to the depot inventory as a supply asset in reporting stock position. A delay in counting these excesses as a supply asset might result in overprocurement. Yet depots were reluctant to include reported excesses with their own stocks on hand in the absence of exact data about quantities, catalog numbers, and condition. In turn, they were not enthusiastic about ordering excesses returned at once, since this would just bring additional storage, accounting, and repair burdens.

Depots were expected to send disposition instructions on excess stocks within 30 days, but these frequently told the station to hold the stocks until further notice or specified a distant shipping date. Actual shipment of the stocks from the station sometimes had to await inspection by depot representatives; sometimes the inspection was made at the depot. Stations were supposed to separate the unserviceable and unrepairable items from other items. In practice, however, depots considered everything unserviceable until it had been inspected and reclassified. During the interval covered by all these contingencies, station returns were not carried on accountable records and were thus not reflected as assets in the supply control system. To surmount this difficulty in part, depots made monthly reports on amounts held in the station excess account; these were recognized in supply control computations as "returned stock," with rough estimates of the month of expected return.

A careful study of all these problems was begun by the Army Service Forces in October 1944, and continued through January. One suggested solution was to instruct stations to box all excess supplies and ship them to the depot of origin without waiting for disposition instructions. This would have had the advantages of ridding stations of excesses and of moving stocks physically back to depots, which would then feel the pressure to classify, repair, and stock the property, as well as to include usable items on stock records. The

proposal was discarded, however, for fear of swamping depots, tying up freight cars, and promoting much unnecessary transportation. Another recommendation, put forth by the survey committee, was to establish a new superreclamation center in each service command to receive station excesses, segregate them, repair matériel that could be reconditioned, and return serviceable items to depots. These centers would relieve stations of the classification burden; they could make use of existing repair facilities which might specialize and so develop production-line methods; and would concentrate the best technical personnel whose judgment about serviceability might then be accepted by depots. There would be automatic shipment of excess stocks to these centers, which in turn would be responsible for all property records. Production planning of all repair operations would be vested centrally in ASF Headquarters.

An experimental reclamation center was established in March in the Fourth Service Command, and its operations were closely studied. Similar procedures were tested in certain installations in the Third Service Command. While these experiments supported the recommendations of the original report, there were fears on the part of some experienced supply officers that the proposed system represented a tendency to set up a new agency to solve problems arising from failures of command and execution which could be remedied within the existing organization by tighter control. It was also feared that the proposed system would merely create new problems replacing old ones.

Final action was taken with the issuance of ASF Circular 156, 1945. The Maintenance Division in ASF Headquarters was made responsible for the centralized planning and control of classification, segregation, and repair activities. Central maintenance control units were established in each technical service and service command to supervise the repair of equipment for return to depot stocks. At the same time, specific technical service and service command repair facilities were designated as specialized shops for processing matériel to be returned to depots. These shops took over the entire task of handling unclassified and unserviceable property formerly spread over station maintenance facilities, technical service shops, and depots. Technical service inspectors in the specialized shops supervised the repair and packing of items before shipment to depots, where they became immediately available for reissue, without further inspection or processing.

This was a fundamental reform, not merely in the elimination of a large field of duplication, but even more in distinguishing maintenance operations for repair and return to user at stations from repair and return to supply channels. The former function was local in scope, usually on a small scale, and called for "bench" craftsmanship; the latter was a nation-wide activity, involving factory production, uniform standards, and planning on a broad scale. The new specialized maintenance shops were organized and operated to fulfill the latter function, while other shops were limited to repair for user or return to station stocks. As a concomitant to this plan, automatic evacuation of unserviceable property, except obvious salvage, from stations to the specialized shops was instituted. Similarly, excess serviceable stocks at stations were evacuated automatically to the depot currently supplying them, if there were no questions

about their serviceability. The governing consideration, of course, was that specialized shops were to perform all repair for returns to depot stocks, and depots were to receive only matériel that was ready for reissue.

These developments were important in preparing zone of interior supply system for redeployment. The volume of stocks being turned in by units sailing for the European theater dwindled to the vanishing point after January 1945. Backlogs remained, but the deluge was to come, early in the fiscal year 1946, when redeployment would swell the maintenance burden of both specialized and station shops. Supplies returned from Europe could be funneled to the specialized shops. Repair shops located on or near installations planned for troop use during redeployment were kept in operation, even though on a small scale, in order to retain skilled personnel for the anticipated burden for repair-for-user work.

This reorganization of the maintenance system within zone of interior was the heart of the problem of returns to stock. The measures taken to process repairable matériel rapidly, through automatic evacuation and repair in specialized shops, removed the principal difficulty. Section I, ASF Circular 210, 1945, set up procedures for stations to prepare monthly reports on selected principal items of unserviceable property. The reports provided essential supply control data and other data needed for technical service repair schedules. Matériel automatically shipped from stations was then picked up on national supply records when finally returned to depot stocks.

Despite the incompleteness of the data obtained under the former reporting system, the quantity of returned stocks recorded under supply control against procurement requirements was substantial. The reports of 31 March 1945 showed returned stocks from zone of interior sources as 1.9 billion for 1945, and an anticipated 934 million for 1946. By the end of the year, Ordnance returned matériel centers, for example, were returning 15,000,000 dollars worth of equipment to stock a month. Quartermaster shops repaired 800,000 pairs of shoes a month for return to stock. Nearly 2,000 field bake ovens were repaired, while the reclaiming of steel helmets amounted to 4,200 per day. These were only examples of items going back into Army supply channels as repaired equipment.

Recovery of Excess Theater Stocks

Section VI, War Department Circular 379, 1944, gave the ASF certain responsibilities in connection with return of excess property from oversea theaters. To the extent that this problem involved handling, repair, and return to supply channels of the returned stocks after their arrival from overseas, it merged into the problem of turned-in and excess stocks in zone of interior. Two categories of excess ASF property were to be returned by theater commanders to the United States under prior disposition instructions as soon as they were determined to be excess, without the necessity for further reports; these were excess subsistence and serviceable excess parts. All other excess property was to be reported to the ASF for disposition instructions. On quantities valued at \$500,000 or less, ASF Headquarters and technical services acted on the basis of existing knowledge about supply status; for quantities of greater value, a supply-control

study was required. Disposition instructions were then given to the theater.

Arrangements for handling property received from overseas were established in September 1944 when ASF Classification Depots were created to serve each major port of embarkation. These depots combined the functions of the existing salvage segregation centers with the processing necessary before returned matériel could be sent to repair shops or to supply depots for storage and reissue. Thus, the classification depots became responsible for segregating returned property into the categories "serviceable," "repairable," and "salvage," and into such subordinate categories as the technical services directed; for preparing the matériel for shipment to supply and maintenance facilities; for repair and reclamation to the extent that local facilities permitted; and finally for disposal of salvage and surplus property. The depots along the eastern seaboard were abolished after VE-day, since the inactive theaters thereafter could handle their own classification and repair operation.

After VE-day the reporting procedures for excess theater stocks were simplified as far as the European and Mediterranean theaters were concerned. A new report to be submitted at 30-day intervals was prescribed showing current excesses immediately available for redistribution, as well as estimates of the quantities of specified items that were anticipated to become available for redistribution during subsequent periods. This report provided a means of checking estimates previously made by the chiefs of technical services and of making the necessary adjustments in procurement schedules, as well as a basis for redeploying supplies from inactive theaters to the Pacific. Spare parts were to be returned to zone of interior as formerly whenever they were excess to the needs of the inactive theater. Since some spare parts were more scarce than others, a list of critical spare parts was sent to the inactive theater to enable them to expedite return of these items to supply channels.

Disposal of Surplus Property

During the fiscal year 1945, the Army Service Forces made some 946 million dollars' worth of property available for redistribution or disposal. About 60 percent of this property was Ordnance, while another 17 percent was Engineer. Some 830 million dollars' worth of property was disposed of during the year—176 million dollars' worth by transfer to other procuring agencies of the War Department, 179 million dollars by transfer to the Navy or other Government agency or by sales to war contractors, and 474 million dollars' worth of property was reported as surplus to disposal agencies designated by the Surplus Property Board. At the end of the year, there was still some 478 million dollars' worth of property on hand awaiting final determination of surplus status by the War Department. The carry-over at the beginning of the year was 362 million dollars' worth of property.

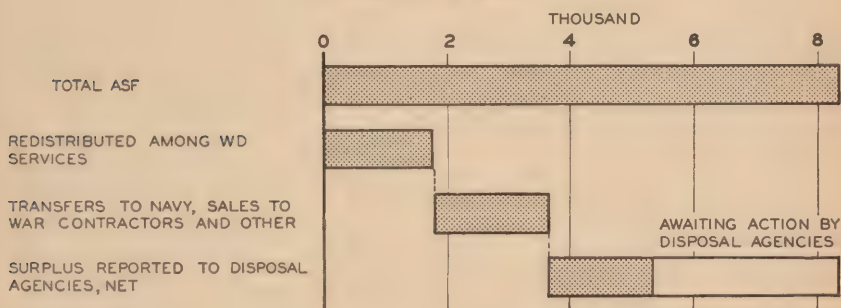
Excess and surplus property was of two types—equipment and supplies used by the Army and its many posts and other facilities, and contractors' inventories taken over in the process of settling terminated contracts. In the fiscal year, the ASF received some 232 million dollars worth of inventories for clearance from plants. There was a

backlog of 48 million dollars worth of property on hand at the beginning of the year. During 1945 some 142 million dollars worth of this property was eventually retained by the contractor or sold by him. Title to another 111 million dollars worth of property was taken by the ASF, leaving an inventory backlog on 30 June 1945 of 27 million dollars. The inventory property taken over by ASF had to be disposed of through the designated channels for disposition of Government property.

There were two steps in the process of disposing of military property excess to the needs of a procuring service. The first step was to declare the property excess. This was done as a result of the monthly computations of supply requirements under the supply control system. When it became evident from past issue experience and known future demand that the quantity on hand of the particular item was more than adequate, an excess resulted. This occurred particularly as a result of changing models in military equipment. When property

REDISTRIBUTION AND DISPOSAL ACTIONS FOR ASF PROPERTY

FISCAL YEAR 1945



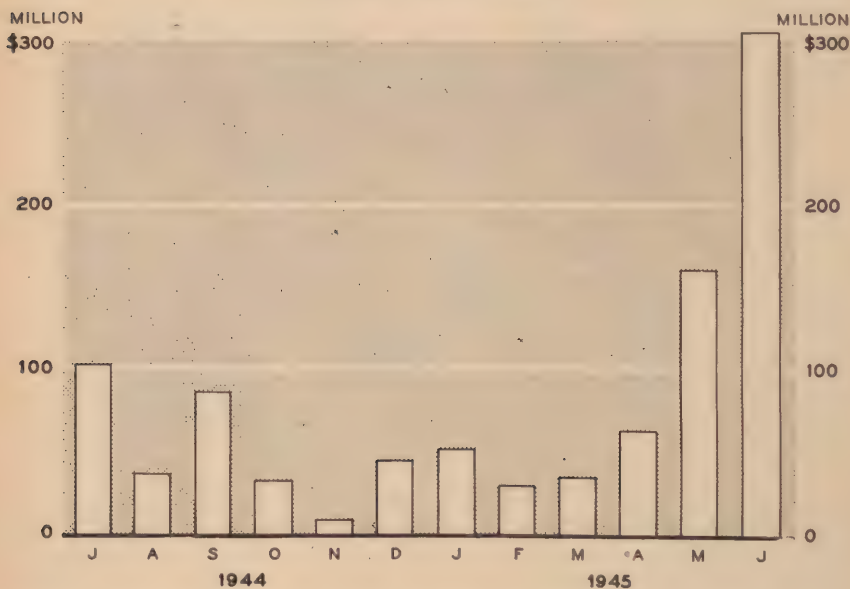
became excess it was placed on a redistribution list which was circularized to other procuring agencies. If any of these desired any of the property, it was transferred to it. If there was no immediate demand from any Government agency, the second step was to declare the property surplus for disposal through the disposal agencies of the Federal Government.

On 3 October 1944, the Surplus Property Act of 1944 was approved by the President. This act established a Surplus Property Board in the Office of War Mobilization with responsibility for general supervision of property disposal. The actual disposal agencies for sale to the public of surplus Government property were designated by the Surplus Property Board. Industrial-type property, including raw materials, was transferred from the War Department to the Reconstruction Finance Corporation. Consumer-type items were transferred originally to the Procurement Division of the Treasury Department and later to the Office of Surplus Property in the Commerce Department. The War Department was still responsible for determining what property was surplus to its own needs and for reporting this property to the disposal agencies.

The first problem in property disposal was to locate and identify excess items. The supply control system provided the basic means for this determination. On the other hand, requirements fluctuated so rapidly on occasion that estimates of future demands for the so-called secondary items were uncertain. In a minor number of instances, certain property held over from the last war or from the early procurement of the current war did not appear on present property inventories. All of the efforts to improve supply information had their effect in locating and identifying excess property. In addition, actual surveys were made of property held in various depots and selected posts to

ASF PROPERTY MADE AVAILABLE FOR REDISTRIBUTION AND DISPOSAL

FISCAL YEAR 1945



determine whether excess property was being carried. These surveys resulted in an increased effort throughout the ASF to declare non-standard and obsolete items excess to the procuring service.

The circularization procedure was revised during the year in order to best serve the dual purpose of diverting unneeded property to other war use and to dispose of property with the least delay. The circularization period was reduced from 60 to 30 days in most instances. For certain types of property no circularization was required unless another procuring agency of the Government indicated an interest in the particular type of property.

The most troublesome aspect of surplus property administration during the year was the storage problem. The high proportion of War Department storage space occupied by military property necessitated the removal of surplus property as rapidly as possible. While

disposal centers for the storage of property were established by the Reconstruction Finance Corporation, they could not begin active operations because of a lack of materials handling equipment. The War Department made every possible effort to assist the RFC in opening these disposal centers. By 30 June 1945, an estimated 12 million dollars of materials handling equipment had been furnished to the RFC by the War Department on a sale or loan basis. The Commerce Department also established disposal centers under its 11 regional offices, most of which were in operation by the end of the year. Continuing effort was made by officers from Headquarters, ASF, and from procurement offices to arrange for the transfer of surplus property in War Department storage to disposal agencies. Yet, at the end of the fiscal year, some 301 million dollars worth of property out of a total of 474 million dollars reported to disposal agencies was still on hand awaiting some action by these disposal agencies.

The surplus property problem was illustrated by the disposition of construction equipment, a critical supply category during the year. The completion of construction projects in the United States and outside under the Corps of Engineers freed some 50,000 pieces of equipment for disposition. There were 33,000 such pieces of equipment held over from the previous year. About 6,000 pieces were repaired and issued to Engineer troops; another 9,000 pieces were transferred to other Army agencies; and 25,000 pieces were reported to disposal agencies for sale to the public.

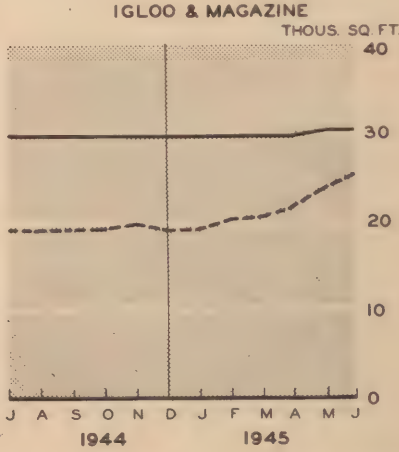
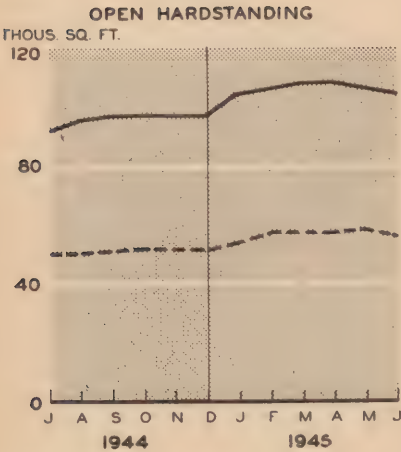
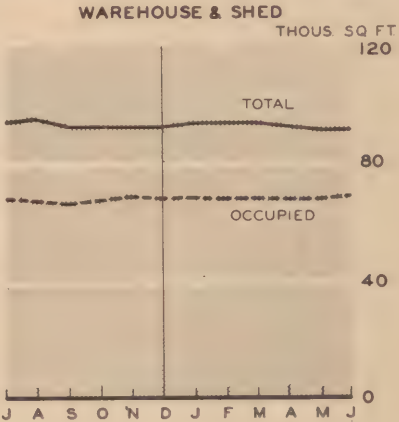
Originally, the Surplus War Property Administration, predecessor of the Surplus Property Board, had assigned responsibility for the disposal of surplus property located overseas to the Foreign Economic Administration. The War Department recommended that this responsibility be reassigned because of the inability of that agency to dispose of property other than aircraft. Accordingly, in December the Director of War Mobilization and Reconversion directed that each Government agency with surplus property overseas dispose of that property directly. In order to handle this assignment, the War and Navy Departments established a joint agency known as the Office of the Army-Navy Liquidation Commissioner. This office was set up in January 1945, and immediately began to designate field representatives to go overseas. By 30 June, representatives had been assigned to the European Theater of Operations, the Mediterranean Theater of Operations, the Persian Gulf Service Command, and the Middle East. In accordance with instructions from the Surplus Property Board, the War Department issued a memorandum on 9 May 1945 establishing the procedures for the disposal of property overseas. Problems of currency exchange and tariffs on oversea property were cleared with the State and Treasury Departments.

Storage

The beginning of the fiscal year 1945 found storage operations in the continental United States in a well-organized and smoothly functioning condition. There were 111 technical service depots and sub-depots, 45 technical service sections in 11 ASF depots, and 11 holding and reconsignment points, all handling somewhat more than 4,000,000 weight tons of supplies each month and shipments from depots were

nearly in balance with receipts. Approximately 1,500,000 tons were moving to ports, with 1,000,000 tons going to East Coast ports. Net usable space was available for the storage of supplies as follows: 94,000,000 square feet of covered space, 92,000,000 square feet of open hardstanding space, and 30,000,000 square feet of igloo and magazine space, with respective percentage occupancies of 71, 52, and 66 percent. In addition, almost 19,000,000 square feet of unsurfaced

GROSS STORAGE SPACE IN OPERATION AT DEPOTS



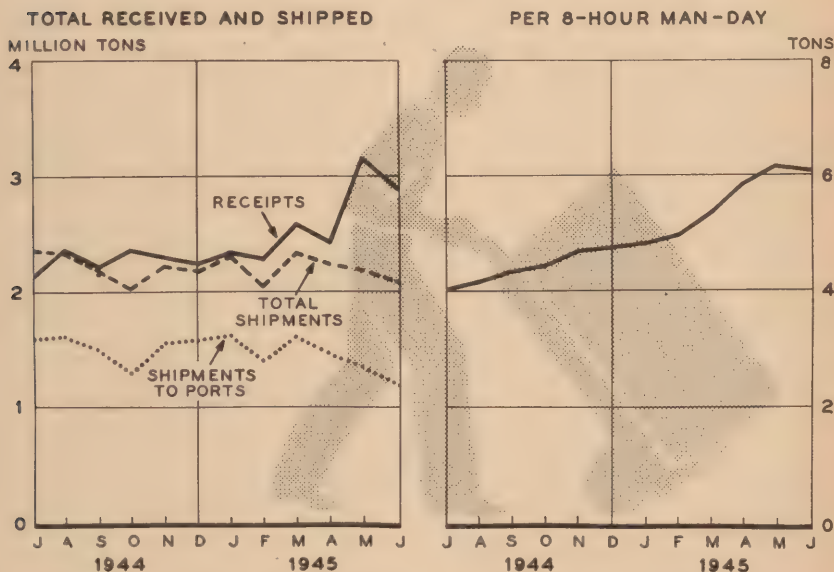
open area had been utilized and were occupied by Army supplies. Slightly over 226,000 people were employed at depots, 94,000 of whom were engaged in storage activities. Adequate mechanical handling equipment, including 4,800 fork lift trucks, was available to permit a highly mechanized and efficient operation. The number of tons handled per receiving and shipping employee increased from 4.01 tons a day in July to 6.08 tons in June 1945.

During the year the work of the depots continued to increase in volume. Total tonnage handled increased to over 5,300,000 tons in May 1945, and this was accomplished with a decrease in the number of storage employees. Several depots undesirably located in leased

space were eliminated and their operations consolidated in other areas. A slight decline in available covered space resulted but was offset by an increase of 15,000,000 square feet in open hardstanding areas and by the utilization of 9,000,000 additional square feet of unsurfaced open areas. Through April 1945, comparatively small amounts of supplies were added to storage, and the greater part of this build-up of depot stocks occurred in western depots which were being prepared for larger Pacific theater operations.

The advent of VE-day found depots with occupancy little changed from that at the beginning of the year. Covered and open space occupancy percents were still 71 and 52 percent, respectively, while the

TONNAGE HANDLED AT DEPOTS



igloo and magazine percent had risen to 72 percent, as of the end of April 1945. The cessation of shipment of many types of supplies to Europe, plus the return to depots of supplies in transit to ETO and MTO, imposed an operational problem during May. Because of adequate advance planning, however, no serious impact on the handling ability of depots resulted.

During March 1945, an emergency situation developed in ammunition storage. Previous estimates on the receipt of ammunition at storage depots were greatly increased, and it became apparent that the 10,000,000 square feet of vacant igloo and magazine space available at that time would be inadequate to meet requirements. An emergency plan for the construction of open storage sites for ammunition was immediately developed and put into effect. Some 500,000 tons of ammunition had been stored in these sites by the end of June 1945.

Many improvements in warehouse operations continued to be made in 1945. New construction was largely replaced by better cubic utilization of space. "Precision warehousing" was eliminated, as

well as storage in numerical sequence and other wasteful practices. Instead, storage was based upon lot size of items which would make full use of available space, with an efficient locator system as the means for identifying the exact place where any desired item was stored. Storage space was utilized by stacking from wall to aisle, and aisle widths were reduced. Loading and unloading operations were planned at least a day ahead, based upon a daily car situation report. Improved procedures were developed for fire protection, safety, selection and training of materials handling equipment operators, and handling small lots. The Chemical Warfare Service, for example, handled 42.5 percent more tonnage in 1945, with only a 29 percent increase in the number of freight cars required.

A manual, "Guide for Storage of Plant Equipment and Termination Materials," was prepared by the ASF and adopted by the Space Coordinating Committee representing the Surplus Property Board, Treasury Department, Navy Department, Reconstruction Finance Corporation, Maritime Commission, Federal Works Agency, and War Production Board. The publication, "Depot Improvements," begun December 1943, was continued, with three new issues presenting the ideas submitted by depot workers judged to be the most valuable suggestions for improving storage, maintenance, and stock control operations.

Careful attention throughout the year was given to the storage situation on the west coast. One new depot was authorized for the Signal Corps at Sacramento. Otherwise, the clearing of excess quantities out of West Coast depots and general improvements in storage operations enabled these depots to handle the increased loads required to support the Pacific war. Approximately 1 million square feet of closed storage space was allocated to western depots in stations which were closed during the year.

A novel development occurred in the study of methods of palletizing boxes for shipment. In order to reduce the use of steel strapping required to fasten boxes to the pallets, glue was tried out as a means of minimizing the sliding of boxes. Experiments with several types of glue resulted in a formula for an adhesive that might prove sufficiently satisfactory to permit the elimination of all strapping of a pallet load. In addition to the savings of steel, convenient removal of boxes from the pallet load was possible with minimum effect upon the boxes themselves. Under commercial quantity shipments, the cost of the adhesive and labor to apply would be less than the corresponding cost of steel strapping. The design of warehouse and shipping pallets constructed of aluminum was also tried. A company producing aluminum structures studied the possibility of using aluminum in this field. The design of such pallets was radically different from the present wooden pallets. Aluminum pallets would reduce tare weight of supplies being moved either in storage or in shipment, might make it feasible to return pallets when used in interdepot shipments, and should reduce the continued replenishment of depot pallet supply.

Readjustments in the storage space held by each technical service were made as needs fluctuated. There were 181 transfers among technical services during the year, involving the reallocation of 9 million square feet of warehouse and shed space, and another 9 million square feet of open storage space.

The occupancy of leased storage space was sharply curtailed. Lease requests were approved for renting only 700,000 square feet of warehouse space, while over 5.5 million square feet of leased closed space were disposed of by transfer to other Government agencies or return to owners.

In 1945, the Storage Division in ASF Headquarters continued to allocate power trucks made available by the WPB to the War Department; 57 percent of the total went overseas—34 percent to storage facilities for ground troops, 12 percent to Air Forces, and 11 percent as lend-lease. The remaining 43 percent was divided 31 percent to the ASF and 12 percent to the AAF in the United States. A total of 21,330 units were delivered to the Army, which about met all requirements. The only shortages were in solid-tire fork lift trucks. Spare parts also improved substantially. With VE-day the shipment of materials handling equipment to Europe was greatly reduced.

The analysis of the use of storage space had to be greatly refined toward the end of the year in order to contribute to a review of the ASF supply position. One check against computed supply demands was to note details of actual tonnages going in and out of depots. To provide desired data depots began to break down their receipts into subcategories—from procurement, from station excess and turned-in stocks, and from other depots; while out-shipments were divided into shipments to eastern and western ports, to other depots, and to posts. The build-up of tonnages in depots meant one of several things—procurement in excess of issue demand, shipping capacity below oversea demand, delay in issuing to ports or posts, slowness in getting rid of obsolete, excess and surplus supplies, or a combination of these. Projections of further stock accumulation were made to determine future storage space requirements.

Studies at the end of the year led the ASF to believe that all storage requirements would be met without any increase in storage space, but it would be necessary to use post facilities and open storage space extensively to supplement depot warehouse space.

Industrial Storage

When the Surplus Property Board designated various Government agencies to dispose of surplus property, these agencies were not required to take over immediate custody of all surplus property but were to assume this responsibility only when prepared to do so. This meant that surplus property reported by the ASF continued in ASF hands until sold or until the RFC or the Department of Commerce were ready to take it over.

When it seemed that the war in Europe might shortly end, the ASF in October 1944, prepared to handle the storage of termination inventories and other military supplies by procuring 4.4 million square feet of prefabricated shelters and by constructing some 1.6 million square feet of oversea type warehouses. An additional 500,000 square feet of space in existing storage facilities was earmarked as reserve. This emergency arrangement was continued until it was believed the disposal agencies were prepared to handle all surplus property.

Since much property had to be scattered in small warehouses, the RFC, which was the disposal agency for a large proportion of contract termination property, recognized that disposition would be delayed

by the many locations for buyers to visit. Therefore, the War Department and the RFC agreed to cooperate in setting up disposal centers for the storage of Defense Plant Corporation and War Department surplus property. The disposal center plan envisioned the acquisition or construction of large units of storage space strategically located both from a disposal point of view and also from the nearness to the point of origin of the surplus property. The technical services and Army Air Forces submitted an estimate of storage space requirements for this type of property for the period following VE-day. A team was appointed to select sites and acquire or authorize construction in the localities indicated by the War Department and the Defense Plant Corporation. Primary emphasis, however, was given to utilizing existing industrial facilities which could be made available for storage. As a result of this program, the RFC had 5,127,000 square feet of warehouse space, 3,402,000 square feet of prefabricated shelters and 11,707,000 square feet of open hardstanding available for storage of contract termination property. Additional acquisition and construction proceeded, and it was contemplated that in excess of 17,000,000 square feet of warehouse, 5,500,000 square feet of prefabricated shelters and 24,000,000 square feet of open hardstanding would be available by the end of July. The RFC employed contractors to operate these disposal centers, and the War Department dropped property accountability upon making shipment to these centers. In establishing these centers, War Department cooperation included construction of oversea type warehouses by the Corps of Engineers, procurement of prefabricated shelters, making available War Department leased or owned facilities, making available materials handling equipment, and assisting in the establishment of storage procedures.

The Procurement Division of the Treasury Department was the disposal agency for handling the largest part of the surplus property used by troops. The Treasury Department recognized its eventual responsibility for the care and storage of this property, and agreed on a plan proposed by the War Department for bulk storage of these surpluses outside of military depots. This plan envisioned the use of excess space in stations as back-up storage for display rooms located where Treasury could show samples of new property and used articles which would require inspection by the prospective purchaser. Space was selected in several active and standby stations as well as some surplus camps. Leased space no longer needed by the War Department as well as some already in operation by the Treasury was included in the plan. Each major storage installation was keyed to a Treasury back-up storage point and a priority established for the movement of surpluses from the most critical storage point first. Subsequent to the establishment of this plan, the disposal responsibility was transferred from the Treasury Department to the Department of Commerce. The Commerce Department was to issue shipping instructions on 2,091,000 square feet of station space and 1,500,000 square feet of leased space. The War Department again cooperated in making space available and in working out procedures.

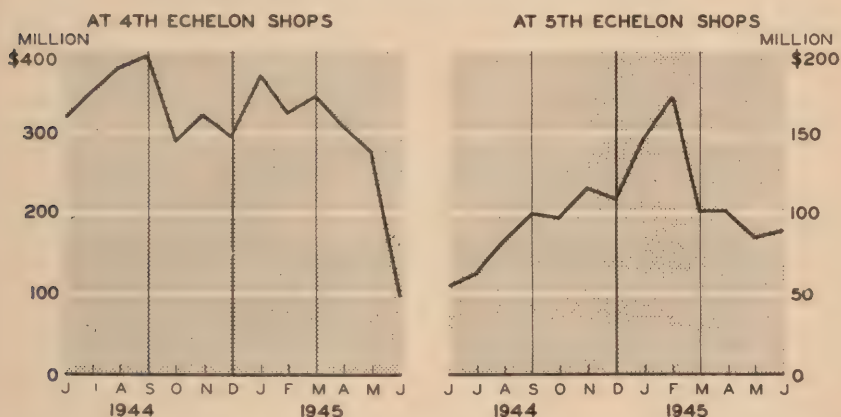
Maintenance

The relationship of the maintenance problem to station and depot supply and supply control has already been mentioned. As suggested,

maintenance activities went through two distinct phases during the fiscal year 1945. In the first 6 months there was an increasing backlog of unserviceable equipment accumulating at posts during the heavy outbound movement of troop units. The second phase during the last half of the year saw a reduction in this backlog as station repair shops had their burden lightened in several ways. Fourth and fifth echelon shops concentrated upon repairs for return to stock, and much of the station maintenance load was shifted to these shops. Then the reduced movement of troop units lessened the flow of turn-in property.

Maintenance performance during the year is graphically shown in the accompanying chart. Fourth echelon shops at posts throughout the United States repaired property worth nearly 3 billion dollars in

VALUE OF EQUIPMENT REPAIRED



1945. The backlog at the beginning of the year amounted to some \$205,000,000, which was cut to \$156,000,000 in March 1945, but was up to \$273,000,000 at the end of the year. This was both repair for return to user and repair for return to stock. Fifth echelon shops repaired about 1.2 billion dollars worth of equipment, of which \$700,000,000 worth were critical supply items. The month-end backlog rose from \$202,000,000 worth of property on 1 July 1944 to a peak of \$374,000,000 worth of property awaiting repair on 30 September 1944. This backlog had been reduced to \$237,000,000 by 30 June 1945. At all times especial attention was given to repairing critical items, while other supply items awaited later sorting and repair.

There were approximately 79,000 persons employed in ASF maintenance installations throughout the year, of which 68 percent were civilians, 25 percent prisoners of war, and 7 percent military personnel. The performance of prisoners of war showed steady improvement, especially after segregation from civilians. The turnover of civilian personnel was a constant difficulty. Intensive on-the-job training programs had to be carried out all the time.

The repair of wheeled vehicles represented the largest single type of maintenance activity. Control of this work was established by

means of a trimonthly report on status of vehicles on hand and repair. Monthly quotas for service commands and other shops were established by types. As a result, the backlog was cut in half within 6 months. Thirteen specialized repair shops were designated for repair of heavy vehicles (4-ton and over). Spare parts for these vehicles were concentrated at the specialized shops. As a result, there was a 50 percent increase in production in the repair of this type of vehicle alone.

Commercial repair facilities were utilized in reducing the backlog of unserviceable matériel, in order to avoid the expansion of War Department facilities. By February 1945, 20 percent of the total work load in fifth echelon repair was being handled in commercial facilities; by June 18 percent of the work load was handled through commercial facilities. Backlogs in fifth echelon shops fluctuated considerably, ranging from a peak of 192 days' work in September 1944, to a low of 75 days in April 1945. Backlogs of assigned work in fourth echelon and combined maintenance shops also reached a peak in September 1944, tapering off toward the end of the fiscal year. The peak backlog of unassigned work was reached in January 1945, after which there was a marked decline. The swelling tide of redeployment, however, was expected to increase backlogs in fourth and fifth echelon activities.

A number of improvements were made in spare parts supply during the fiscal year. Additional sections were published in ASF catalogs, continuing the process of standardizing the nomenclature of interchangeable parts. In all technical services, centralized control was established over maintenance supplies, resulting in a uniform method for determining the adequacy of spare parts assortments carried by maintenance shops. A survey was made at 31 different shop activities in 10 installations between 9 and 26 March 1945. As a result of this survey, numerous recommendations were made to improve stock control procedures at maintenance installations. Action was under way at the end of the fiscal year to incorporate the recommendations into the manual on station-supply procedure.

The project for the elimination of unnecessary duplication of tool sets and kits procured, stored, and issued by the various technical services was virtually completed in the fiscal year. Constant effort was necessary to provide newly required sets of tools with a minimum of duplication. Among the outstanding achievements of this phase of maintenance development was the standardization of the Ordnance Tool Set, General Mechanics, the most widely distributed tool set of its kind. This particular set, of which several hundred thousand were furnished maintenance units, provided technicians engaged in a wide variety of work with those common hand tools of the automotive type required in most mechanical maintenance.

Equally important accomplishments of this program were the reduction of duplication in tool sets for blacksmiths, ignition mechanics, carburetor mechanics, carpenters and electricians, all of which have contributed to increased production, efficiency, and more economical maintenance operations.

Reports from theaters of operations on deficiencies or inadequacies in the components of existing standard sets of tools and equipment led to continuous research and development to incorporate actual field experience in the design of various tool sets. The most outstanding

example of improvement thus brought about was the plan to replace open cargo body shop trucks with closed shop trucks to provide protection from the weather for machine tools and for technicians attempting to perform accurate work. Adjustments were also made in components of tool sets to eliminate deficiencies, such as the need for lathes, valve service equipment, and brake drum renewing equipment in the Ordnance Light and Medium Maintenance Companies. Experience in operating automotive fifth echelon shops which rebuild engines, power train units, and assemblies on a production lines system, also resulted in changes in numerous operating tools required in these shops, as well as improvement in the operating techniques required with such tools.

The development of a procedure for cross-identification of tools and equipment was a major undertaking of the year. In the early stages of the war there was some duplication in the procurement, storage and issue of required tools and tool equipment by technical services. There were many identical tools and no ready means available for determining cross-identity of individual items. Tools which were needed in one service were in some instances found to be excess in the stocks of another. Because of the various systems of cataloging and numbering, no practical means was available for interchange of stock information. As a practical means of alleviating this situation, work was begun on an ASF Tool and Tool Equipment Catalog in which the Federal Standard Stock Catalog nomenclature and stock number for every individual tool were indicated, together with the stock number of each of the technical services procuring and issuing this equipment. Since the Ordnance Department had major interest, it prepared the publication with the assistance of the other technical services. The catalog was in its final stages of preparation by the end of the year and publication was to begin early in the new fiscal year. The ASF Tool and Tool Equipment Catalog was to be published in three sections: Section One, listing all tools and tool equipment alphabetically; Section Two, listing the same items numerically; Section Three, listing all sets of tools and equipment in functional groups.

The preventive maintenance program of the Army was furthered during the year by insuring that all operating manuals on military equipment included maintenance instructions and by preparing specific maintenance literature to accompany all major pieces of equipment. Over 1,100 manuals and instructions were reviewed by the Maintenance Division, and all training programs were carefully studied to make certain that adequate time was given to maintenance. Some 747 lubrication orders were issued during the year.

The maintenance engineering program made additional progress in reducing types of equipment. Preferred listings of makes and models based upon performance characteristics were issued for engines, generators, compressors, oil filters, gasoline filters, and materials handling equipment. Other lists were being developed for such equipment as tires, batteries, motor vehicles, and air cleaners. A number of studies were begun on various radios and other pieces of communications equipment.

The Army conservation program was active throughout the year, directing attention to the supplies and equipment commonly used by a majority of troops. The media were the same—posters, tags and

stickers, news stories, radio programs, and spot announcements over public address systems. Emphasis was placed upon the small actions that the individual could take to prevent wastage of equipment. Oversea commanders were asked in October 1944, if they wished to continue to receive automatic issue of conservation posters. All replied that they did, and many favorable comments were received on the program.

Laundries

At the end of the fiscal year there were 154 laundry and 34 laundry and dry-cleaning shops operated by the Army in the United States. These shops handled nearly 2 billion pieces of clothing, and provided 56 million dollars worth of service. Some 12 leased commercial facilities were returned to their owners.

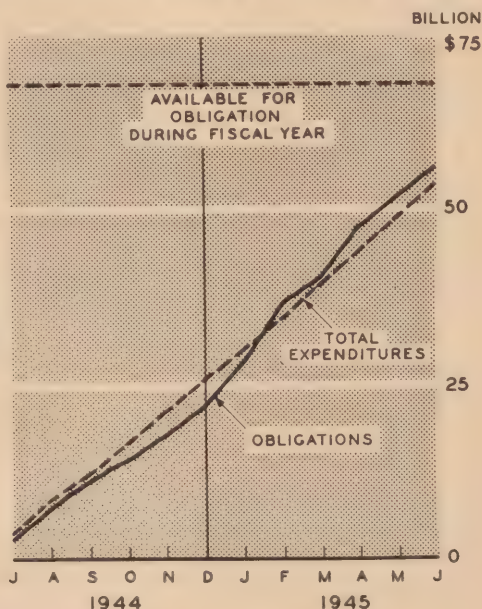
Technical inspectors of The Quartermaster General visited all plants quarterly instead of semiannually during the year. New standard administrative and operating procedures were provided, and a price list for all laundry and dry-cleaning supplies was issued which eliminated the need for supplying depots to include this information on shipping documents.

By using methods developed in 1944 to measure the efficiency of laundries, it was found that production per individual increased from 5,950 to 6,772 pieces per month during the year. At the same time, and without adjustment for increased price levels, the cost of supplies utilized in processing \$100 worth of laundry was decreased by approximately 10 percent. Methods for measuring the efficiency of hospital laundries were also developed, after supervision of their operations was vested in The Quartermaster General.

Chapter 15. FISCAL SERVICES

New appropriations to the War Department for the fiscal year 1945 amounted to 15 billion dollars which, when added to the balance carried forward from previous years, authorized adjustments, and reimbursements, provided a total of 68 billion dollars available for obligation. Total appropriations, including transfers and reimbursements since 1 July 1940, amounted to 219 billion dollars. For 7 months during 1945, the rate of expenditures exceeded the rate of obligations, indicating that deliveries on supply contracts were be-

WAR DEPARTMENT OBLIGATIONS AND EXPENDITURES CUMULATIVE FOR FISCAL YEAR 1945



coming current and that at the same time, contracts were either being completed or were being canceled because of changing requirements. Total obligations came to 56 billion dollars, while payments by Army disbursing officers during the fiscal year amounted to 54.4 billion dollars, an average of 4.5 billion dollars a month.

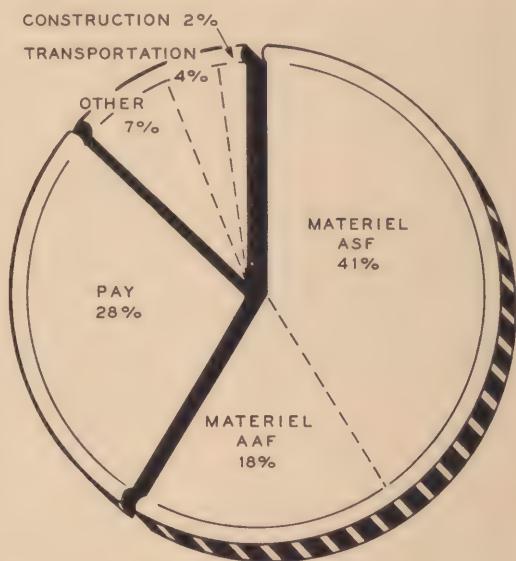
Prompt payment of all War Department bills continued to be made by disbursing officers throughout the United States. For example, over 940,000 commercial invoices were cleared in June 1945, with only 7 days' bills in process at the end of the month. The number of unpaid commercial invoices over 60 days old was less than one-half of 1 percent of the number paid in June, a reduction of 75 percent in 60-day old bills since 30 November 1944. In addition,

1,100,000 bills from common carriers for the transportation of troops and war materials were paid in June. At the end of the month none of these had been on hand longer than 12 days.

More than 130 million checks were issued in making all War Department disbursements in 1945. About 35 percent of these covered commercial invoices, pay and travel accounts, and civilian pay rolls. The remainder were mainly for family allowance and voluntary allotment payments. Enlisted men customarily received their pay in cash.

The Office of the Fiscal Director supervised the distribution of United States currency and coin to disbursing officers throughout the world. A new system was set up whereby disbursing officers overseas were credited with balances in foreign depository banks

**HOW THE
WAR DEPT.
DOLLAR
WAS SPENT
FISCAL YEAR 1945**



against which foreign currency could be procured and checks drawn in settlement of obligations payable in various foreign areas. There was thus established an international funding system for Army disbursements.

By the end of the fiscal year, the War Department was paying military personnel in over 40 foreign areas. Uniform rates of exchange for pay conversion were established in cooperation with the State and Treasury Departments. Special currency was made in the United States and used in Allied military operations in French North Africa, Italy, France, Netherlands, Germany, Austria, the Philippines, and the Japanese islands in the Pacific. Continuous studies were conducted to provide information for establishing uniform rates of monetary allowances for enlisted personnel of the Army and Navy throughout the world and to equalize these rates on the basis of purchasing power among the various theaters of operation.

A new nonnegotiable instrument, the U. S. Military Disbursing Officer's Payment Order, was initiated during the year to be used

by both Army and Navy disbursing officers. This instrument was designed to facilitate the carrying of personal funds of military personnel moving between different countries, minimizing the use of actual currency and opportunities for engaging in black market or unauthorized foreign currency transactions.

At the beginning of the year all disbursements in the settlement of casualty cases were assembled at one installation, the Office of Special Settlement Accounts in New York City. The payment of death gratuity claims increased substantially; 17,000 such claims were paid in June 1945, compared with 6,000 in June 1944. There were some 17,900 cases awaiting settlement on 30 June, of which 92 percent were awaiting the submission of necessary papers by beneficiaries. Comparable increases were made in the final pay settlements of deceased military personnel and in payments on account of those missing or prisoners of war.

Particular attention was given to prompt payment of recovered American prisoners of war returned to the United States. Partial payments were made to each of these at the United States port of entry and the balance due him was paid at a reception station or hospital. At the close of the fiscal year a new office, the Army Central Adjustment Office, was established in Chicago to investigate and adjust all matters involving additional amounts due to military personnel who had been separated from the service, and to collect any amounts due the United States from such personnel.

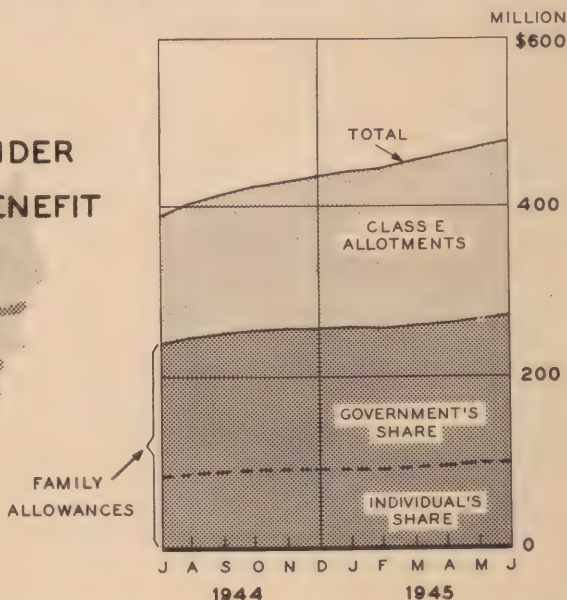
The volume of dependency payments increased each month during the fiscal year 1945. On 30 June there were 4,000,000 effective family allowance accounts as compared with 3,700,000 a year before. The number of voluntary allotment accounts increased even more rapidly, from 2,700,000 to 3,800,000. This was a result of the large numbers of military personnel moving overseas. Despite the great increase in number of payments, the Office of Dependency Benefits in Newark had all 7,864,000 checks covering the regular June payment delivered to the post office by 1220 on 1 July 1945. In addition, the Office of the Fiscal Director, at the end of the year, was paying more than 10 million allotments amounting to 55 million dollars a month to the Veterans Administration to cover premiums on U. S. Government and National Service Life Insurance carried by military personnel.

The four regional accounting offices established throughout the United States continued during the year to examine all disbursement accounts of disbursing offices. These offices processed nearly 2 million accounting transactions in June 1945. Operating costs were substantially reduced through simplified procedures, for example, a summary officer's pay voucher was developed which reduced the number of transactions to be processed through the regional accounting offices and the foreign fiscal offices by several hundred thousand transactions a month. The General Accounting Office also maintained adjacent offices for the audit and final settlement of War Department accounts. With few exceptions, the General Accounting Office completed the audit of all War Department accounts within 90 days of the date of disbursement. The current status of this audit materially helped in clearing most questions asked by the auditors of the General Accounting Office. Outstanding suspensions on other than cost-plus-a-fixed-fee contracts represented less than $\frac{1}{1000}$ of 1

percent of the total payments—in other words, 2 million dollars out of approximately 125 billion dollars of expenditures in this category. Since 1942, The Comptroller General has expedited the audit of cost-plus-a-fixed-fee contracts by performing the examination at contractors' plants. By the end of the fiscal year 1945 outstanding suspensions represented only $\frac{1}{20}$ of 1 percent of the total payment—or 11 million dollars out of an estimated expenditure of 22 billion dollars under these contracts.

As a corollary to its accounting and disbursing activities, the Office of the Fiscal Director supervised many financial services. A new plan was introduced during the year for the issuance of war bonds to military personnel. All partial payment plans were discontinued

PAYMENTS UNDER DEPENDENCY BENEFIT PROGRAM



and bonds were issued only when paid for. The new \$10.00 G.I. bond met with ready acceptance; more than 1 million of these were purchased each month by pay deduction or for cash. The value of bonds issued to all military personnel during the month of June 1945, amounted to over 49 million dollars. The value of war bonds issued by disbursing officers to War Department civilian personnel amounted to 30 million dollars in June 1945. At the end of that month 94.9 percent of all War Department civilian employees were purchasing war bonds under the pay reservation plan in an amount equal to 12.5 percent of the monthly pay roll.

The number of deposit accounts maintained for enlisted men more than doubled during the fiscal year, coming to 694,000 accounts with deposits of \$213,000,000 by 30 June 1945. Four percent interest was paid on these deposits with the U. S. Treasury.

Through the facilities of disbursing officers, 395,000 personal transfers of funds to the United States from overseas amounting to \$73,000,000 were made in March 1945, three times the amount trans-

ferred in March 1944. The number of transfers was down to 293,000 in June 1945, and the amount was \$68,000,000.

A concerted promotional campaign was inaugurated during the year to encourage oversea soldiers to invest a larger proportion of their pay in voluntary allotments, war bonds, soldiers' deposits, life insurance, or personal transfers of funds. The entire promotional effort was called the Soldiers Savings Program. As a result, the amount available to military personnel overseas for local purchases from the countries where stationed was reduced to approximately 15 percent of their actual pay. Furthermore, soldiers thus accumulated savings for use in postwar years.

The banking facilities provided for officers and enlisted men at posts and stations throughout the United States were extended in 1945 to Army hospitals, industrial plants, and housing developments. As of 30 June 1945, there were 287 banking facilities authorized as compared with 251 a year before.

The Office of the Fiscal Director continued to supervise advance payments to contractors. Since July 1940, War Department contractors have thus been provided with working capital amounting to more than 6.8 billion dollars. By 30 June 1945, some 5.8 billion dollars had been repaid. Under the system of loans guaranteed by the War Department and made through the Federal Reserve Banks as agents, more than 7.6 billion dollars of capital was provided to prime and subcontractors. After setting up a substantial reserve against losses, these financial programs showed a net profit of more than 40 million dollars at the end of the year.

By 30 June 1945, the savings to the War Department under the War Department insurance rating plan and similar arrangements amounted to hundreds of millions of dollars. All types of insurance and contractors' pensions and annuity plans were handled under this program at a savings from standard commercial premium costs.

In order to expedite the settlement of terminated contracts, disbursing officers were able to make payments under termination settlements solely on the basis of certification from the contracting or other settling officer. This action was permitted under the terms of the Contract Settlement Act of 1 July 1944.

War Department termination accounting and auditing procedures for fixed price contract terminations were established during the year. More than 2,500 military and civilian personnel were trained in these procedures at the Army Finance School. Field audit coordinating committees were established to avoid duplication of property auditing between the War and Navy Departments in contractors' plants. The principle of selective auditing was adopted in place of the previous policy of 100 percent detailed audit of all contractors' transactions.

A new wartime conception of property responsibility was developed during the fiscal year and promulgated in revised Army Regulations. This new policy vested responsibility for supply discipline in supervisory channels rather than fixing pecuniary liability in case of loss or damage. In the past, military personnel might by payment of charges obtain replacement of military equipment. Now, commanders were made responsible for insuring that no military property was lost or damaged carelessly. The audit of military property accounts for various military organizations in the United States was decentralized

to the post level. Authority to approve surveys of lost, damaged, or destroyed property was also decentralized to the post in those cases where pecuniary liability was not fixed. Normal property accounting procedures were begun in those overseas theaters no longer in an active combat status after the defeat of Germany.

In connection with cost-plus-a-fixed-fee supply contracts, the duplication of contractor's property records by Government personnel was eliminated during the year and the policy of relying upon contractors' records, when adequate, was begun, with selective checking of these records from time to time by War Department officials.

By the end of the fiscal year 1945 there were uniform fiscal accounting procedures throughout the military establishment. Each field installation and operating headquarters was currently furnished with expenditure information. Instructions were also developed for the establishment of central fiscal offices in overseas theaters whereby accounts of disbursing officers were examined in the theater and reports on expenditures rendered. As a result of this procedure, War Department figures on obligations and expenditures were compiled within 20 days after the close of each reporting period.

New accounting and reporting procedures were developed for the disposition of Army and Navy surpluses outside the United States. Other procedures and standards were provided for the use of military government and civil affairs funds in their supply transactions overseas. An accounting and reporting system was begun whereby the amounts of War Department collections and expenditures in various theaters, individual countries, and groups of islands were currently determined.

Chapter 16. ADMINISTRATIVE SERVICES

Military Justice

With the large-scale movement of American troops overseas, the Office of The Judge Advocate General had fewer general courts-martial cases to review in 1945 than in 1944—some 13,000 compared with more than 18,000 the year before. On the other hand, The Assistant Judge Advocate General and The Judge Advocate General reviewed more cases personally than in any previous period before forwarding sentences to the President for approval.

In the first 6 months, there were 1,465 cases involving dishonorable discharge for enlisted men and 265 cases for officers—nearly twice the number for the entire year 1942. Boards of Review established overseas continued to review all cases arising overseas. The number of boards in the European theater was increased from two to three, and a fifth branch office was established for the Army forces in the Pacific Ocean Areas. The branch office in the India-Burma theater was empowered also to handle the review of cases tried in the China theater.

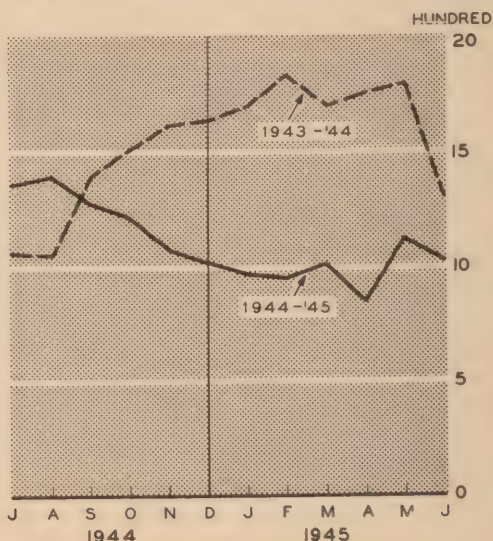
Further progress was made in the United States in insuring an immediate trial for all general court-martial cases. The average length of time between confinement and sentence was cut from 13.8 days in the ASF in July 1944, to 8.5 days in June 1945. For the AGF, the average length of time was cut from 26.9 to 17.1 days, and for the AAF from 25.1 to 21.7 days. Judge advocates in service commands and in other commands were cautioned that speed for speed's sake was not the objective in bringing men to trial—what was desired was the elimination of every possible delay in preparing cases and collecting witnesses while the accused were confined in post stockades or elsewhere. In the calendar year 1943, ASF commands took 28 days on the average from the time of a man's confinement to the conclusion of his trial; in the calendar year 1944, that had been reduced by more than half—to 13 days. The Ground Forces similarly reduced the average time from 27.6 to 23.4 days, and the Air Forces from 26.6 to 24.2 days.

Judge advocates attached to commands both in the United States and overseas were instructed to lessen the severity of sentences and to make greater use of the disciplinary authority of commanding officers, including trials by summary and special courts-martial. The same policy was enforced by reviewing authorities. For the fiscal year as a whole, The Judge Advocate General's Office handled over 3,200 military justice case opinions compared with 2,600 in the preceding year. In addition, more than 5,000 cases were reviewed to determine the desirability of clemency compared with only 2,200 cases in the fiscal year 1944. The examination of the record of a trial for legal sufficiency and the review of court-martial record for clemency recommen-

dations continued to be completed in 24 hours, except in unusual circumstances.

On 25 September 1944, the Secretary of War directed The Judge Advocate General to establish an agency to insure the punishment of enemy individuals guilty of cruelties, atrocities, and acts of oppression against members of the Armed Forces of the United States or other Americans, including civilians in the Philippines. A War Crimes Division was created to handle this work in cooperation with the United Nations War Crimes Commission in London and other Government agencies such as the State, Treasury, Justice, and Navy Departments. As the result of an agreement between the State, War, and Navy Departments, the War Crimes Division became the central United States agency for the gathering of evidence on war crimes.

GENERAL COURT-MARTIAL CASES REVIEWED BY JAG



The Judge Advocate General of the Navy Department detailed naval officers for duty with this central organization. In December 1944, the War Department directed theater commanders to create war crimes branches in the offices of their own judge advocates. Direct communication between the War Crimes Office in Washington and these branches was authorized. It was decided that, in general, all trials would be conducted overseas in the vicinity of the crime committed. Information in all cases collected by the War Crimes Office was forwarded to the theaters for action. General policies were determined in Washington.

Legal Services

A great deal of legislation was enacted by the Congress during the fiscal year 1945 affecting the status of military and civilian personnel and the administration of the War Department. Most of this legislation was reviewed during consideration by The Judge Advocate General and official opinions about its effect were thereafter rendered to the entire military establishment. Among the important pieces of

legislation were the Servicemen's Readjustment Act of 1945 (Public Law 346, 78th Congress), the appointment as commissioned officers of Army nurses and other female personnel (Public Law 350, 78th Congress), provisions for placing on the retire list certain classes of enlisted men in the Regular Army (Public Law 51, 79th Congress), and authorization for enlistments in the Regular Army in time of war (Public Law 72, 79th Congress). Amendments to many other existing laws were also considered, including the National Defense Act of 1920, the Soldiers' and Sailors' Civil Relief Act of 1940, the Selective Training and Service Act of 1940, and the Mustering-Out Payment Act of 1944.

Among the important subjects on which written opinions were issued during the year were limitations on the use of Government vehicles, establishment of an officers' honorary retired list, benefits granted by the Missing Persons Act, regulations on the review of Army Retiring Board decisions, and the status of members of the organized military forces of the Philippines.

During the year a number of publications were issued for the use of judge advocates and others throughout the Army. These included a digest of opinions interpreting statutory provisions on retirement benefits for military personnel; a summary of statutes, opinions, and decisions on the military forces of the Philippines; a list of emergency laws relating to the Army with the dates on which they terminated; and a resume of the opinions construing the provisions of the Soldiers Voting Law (Public Law 277, 78th Congress). In 1945, The Judge Advocate General disposed of 526 formal cases and 1,449 informal cases in the field of international law. There was a definite increase in the number of questions concerning prisoners of war, leased bases in British colonies, foreign taxation of military personnel, and violations of the laws of war.

Briefs were prepared and oral arguments were presented in several cases in federal courts dealing with the exclusion of persons of Japanese ancestry from coastal areas and with military jurisdiction over civilians serving in the Army. Considerable attention was also given to cases concerning personnel eligible for employment on hospital ships, the establishment of suitable criminal jurisdiction over American personnel working at oil refineries in the Middle East, and the disposal of recaptured Allied merchant vessels.

Immediately before and after the German surrender, The Judge Advocate General rendered opinions on a number of important questions such as the effect of unconditional surrender on the status of resisting Germans, the waiver by Germany of certain provisions of the Geneva Convention, the effect of unconditional surrender on the employment of German prisoners of war, the representation of interests of German prisoners of war after the withdrawal of Switzerland as the protecting power, the effect of the renunciation by Japan of its pact of alliance with Germany, and the future employment of former prisoners of war liberated in Germany.

At the beginning of the fiscal year there were 45 proceedings pending before the Interstate Commerce Commission in which the Secretary of War was a party. Another 96 proceedings were begun during the fiscal year and 105 were concluded. Of the proceedings that were disposed of, 56 percent involved applications by railway companies

for permission to abandon lines and 44 percent involved efforts by the War Department to obtain reductions or to prevent increases in the rates of common carriers. As counsel for the Secretary of War, The Judge Advocate General successfully opposed efforts by carriers to obtain increased rates on the transportation of internal combustion engines and obtained reduced rates on airplane propellers. The Supreme Court upheld an order of the Interstate Commerce Commission prescribing reduced bus fares for the transportation of passengers between the District of Columbia and Government buildings in nearby Virginia.

The Judge Advocate General's Office also cooperated with the Department of Justice in the handling of some 1,500 cases instituted during the year affecting the interests of the War Department. Nearly a third of these cases were against cost-plus-a-fixed-fee contractors of the War Department. Another large proportion were cases involving the Renegotiation Act. A total of 231 court cases against cost-plus-a-fixed-fee contracts involving demands aggregating nearly 3 million dollars were disposed of for the total sum of \$360,000.

Most of the tax problems for the War Department during the year covered specific cases and problems arising out of agreements previously made with various state governments. General negotiations were still proceeding with the State of Alabama in order to obtain an exemption from the Alabama sales tax for cost-plus-a-fixed-fee manufacturing contractors. As a result of the Supreme Court decision in *U. S. v. Alleghany County*, there was considerably less effort by various state governments to tax Government-owned real property. In California, however, efforts were renewed to tax contractors operating Government-owned plants; the question was in litigation in the California courts at the end of the year. The question of taxability of advance payment accounts was also in litigation in California. By 1945, most states had ceased their efforts to tax gasoline sold to the United States.

The Judge Advocate General also rendered advice to various offices on the application of Federal excise taxes to the procurement and disposition of war supplies. New procurement regulations and contract provisions were written during the year about these taxes. An exemption from the Federal retailers' excise tax was obtained from the Bureau of Internal Revenue on the Christmas gift program of the Army Exchange Service. Congress also enacted a law (Public Law 415, 78th Congress) protecting military personnel from double taxation of their personal property.

During 1945 The Judge Advocate General's Office processed 66,000 claims cases compared with 58,000 in the preceding year. Sponsored by the War Department, a new law was passed by Congress and signed by the President on 29 May 1945 liberalizing the provisions of payment of claims to military personnel and civilian employees for their property damaged, lost, or destroyed from war service. In May a branch office of The Judge Advocate General was established in Baltimore to process these claims, which were expected to number between 60,000 and 80,000, from former American prisoners of war returned to the United States and from other personnel.

Most claims cases continued to be handled by service commands. The Judge Advocate General took action on 33,000 claims of which

26,500 were approved for a payment of \$4,000,000. There was a great increase in the number of claims arising overseas. Many of these were turned over after initial investigation to Allied governments for payment as reciprocal aid. Comprehensive manuals on claims service were prepared for the use of oversea theaters.

An intensified effort was made during the year to collect claims in favor of the United States; some \$500,000 was thus collected. A large volume of work involving contract provisions was again handled by The Judge Advocate General's Office. The War Department was represented in all cases of appeals by contractors to the War Department Board of Contract Appeals. Legal counsel was also provided in all cases where the War Department undertook emergency operation of plant and industrial facilities seized by the Government as a result of threatened interruptions of production. In almost all cases, operations were conducted by agreement between the Government and the companies without cost to the Government other than the expenses of Army personnel and equipment engaged in the operation. In one case, the War Department encountered uncompromising opposition on the company's part and The Judge Advocate General assisted the Department of Justice in its efforts to sustain the legality of the seizure and operation.

The Judge Advocate General collaborated with the Department of Justice in the defense of 14 patent infringement suits and in the prosecution of another 14 patent interferences involving inventions affecting procurement activities of the War Department. In addition, nearly 6,000 patent applications were reviewed and in 1,300 of these secrecy orders were recommended to the Commissioner of Patents. Some 873 invention disclosures were received from the Director of the Office of Scientific Research and Development and appropriate patent action taken by the War Department. Numerous royalty-free licenses continued to be donated by patriotic patent owners. In addition, 171 applications for patents were prosecuted to cover inventions of military and civilian personnel under the jurisdiction of the War Department.

The Judge Advocate General considered 1,476 formal legal questions involving the acquisition, use, and disposition of lands under the control of the Secretary of War. Among the legal matters involved were questions concerning the relocation of railroads and other utility lines, the granting of easements and rights-of-way, flood control, the sale or exchange of real estate, and Federal jurisdiction over military reservations and war housing projects. During the year, about 20,000 sets of title papers were classified, indexed, and filed by The Judge Advocate General's Office.

Legal Assistance

The number of legal assistance offices throughout the Army increased from about 1,100 to about some 1,450 during the year. The estimated volume of cases handled for servicemen and their dependents grew from 2.5 million to 3.5 million. About 25 percent of all matters handled by legal assistance officers involved powers of attorney for next of kin. The two other important subjects on which military personnel sought assistance were wills and taxation.

The increase in the number of legal assistance offices occurred

mainly in oversea theaters. With redeployment of the Army after V-E Day, a great increase in legal assistance activity was expected to occur in the United States.

A large number of legal assistance matters were handled by some 27,000 civilian lawyers cooperating with state and local bar association committees on war work. These lawyers donated their services in order to provide adequate legal advice and assistance to all servicemen and their dependents. Officers who were also lawyers likewise made their services available to military personnel. With the cooperation of the Federal-State Relations Section of the Department of Justice and the Council of State Governments, five proposals for remedial state legislation of benefit to military personnel were brought to the attention of the 44 state governments with legislative sessions in 1945. Many state legislatures adopted these proposals, particularly those concerning witnesses to wills.

The Correction Program—Rehabilitation Centers and Disciplinary Barracks

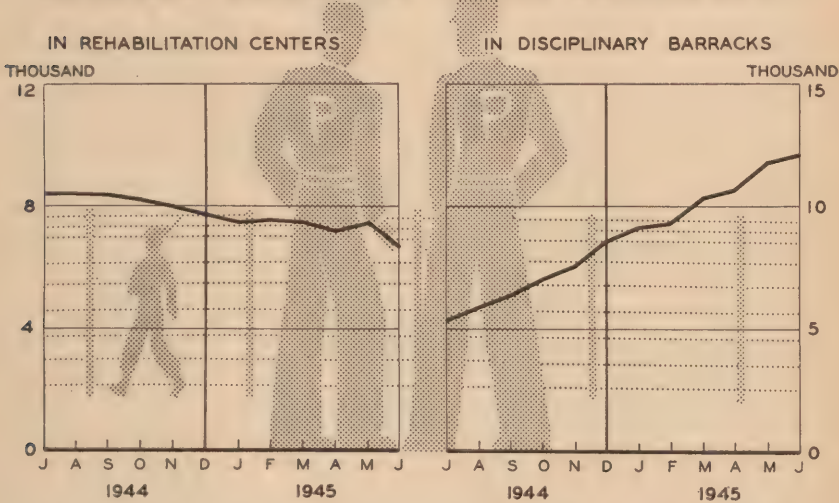
One of the unique programs in this war was the care, custody, training, rehabilitation, and restoration to duty of general prisoners—soldiers convicted of crime and held in detention. During the fiscal year a Correction Division was established in the Office of The Adjutant General with staff supervision over rehabilitation centers and disciplinary barracks. After its creation, this division established standard policies and operating procedures based on the suggestions of a civilian board of consultants and on field studies made by the Director of Military Training, The Judge Advocate General, and The Surgeon General. Service commands operating rehabilitation centers and disciplinary barracks were encouraged to seek the advice of members of the board, as well as to consult the staffs of nearby Federal institutions and to observe these institutions in operation. The board of consultants was appointed by the Under Secretary of War shortly after the creation of the Correction Division. It was composed of the country's leading penalogists and prison administrators and included the Director of the Federal Bureau of Prisons, the General Secretary of the American Prison Association, three state commissioners of correction, four Federal and two State institution wardens, and a former Commissioner of Correction for New York City who was chairman of the board.

A standard military training program for rehabilitation centers and processing centers was developed by the Director of Military Training and issued in July 1944. The program included basic technical training, close order infantry drill, physical conditioning, an Army orientation course, and group therapy. With the assistance of the Director of Military Training, the Correction Division completed a tentative program for Disciplinary Companies at disciplinary barracks comparable to the program established for rehabilitation centers. In process of development were elementary courses in vocational subjects which might be of practical value to prisoners who were not restored to military duty. Also at the end of the year, a series of circulars were being written on suggested techniques, procedures, and methods of operation for the rehabilitation program. One outlined methods of processing prisoners to determine the type of custody, educational

program, and work assignments desirable in each case, or when to recommend clemency, restoration to duty, or transfer to another institution. This proposed processing procedure was an adaptation of the classification methods used by all institutions of the Federal Bureau of Prisons and the more progressive state prisons, reformatories, and correctional institutions. The second of the series of standard procedures dealt with the administration of discipline at disciplinary barracks and rehabilitation centers.

Lack of facilities for segregation and isolation was the cause of disciplinary problems in installations, particularly where nonrestorable prisoners were in the same area with the restorables. Proposals for segregation and isolation were introduced and classification procedures improved and accelerated to remove from rehabilitation centers with a

GENERAL PRISONERS UNDER CONFINEMENT



minimum of delay the trouble-makers usually found among non-restorables. During the year there were developed in collaboration with the U. S. Bureau of Prisons standard plans for a 48-cell detention unit of fireproof construction for isolation purposes. Wooden solitary-confinement cells in various installations were being replaced at the end of the year by the new units. It was estimated that two 48-cell detention units would ordinarily be sufficient housing for the isolation units of a 2,000 capacity disciplinary barracks.

Rehabilitation centers and disciplinary barracks were faced with the problem of locating qualified guard personnel. Screening teams were sent to various service command headquarters at frequent intervals to screen limited service personnel at ASF training centers in a search for qualified guard personnel. Six medium custody disciplinary barracks were established during the fiscal year. Two, one at Fort Benjamin Harrison and another at Camp Gordon, were in operation by 30 June 1945. The remaining establishments were expected to open during the early part of the fiscal year 1946.

The number of prisoners held in rehabilitation centers during the year declined from 8,500 on 1 July 1944 to 6,700 on 30 June 1945. On

the other hand, the number of prisoners held in disciplinary barracks, the Army's penitentiaries, increased from 4,500 to 12,800. The latter number would increase two or three times as general prisoners were returned from Europe. During the fiscal year 6,754 men were restored to military duty from rehabilitation centers in the United States. Another 6,000 had to be transferred to disciplinary barracks. Total admissions to rehabilitation centers came to over 13,000 during the year.

Police Activities

During the fiscal year 1945 there were some 47,300 criminal investigation cases involving military personnel in the United States. In 19 percent of these cases, crimes committed by soldiers against the person were charged, and in 81 percent of the cases crimes against property were alleged. Stolen Government property valued at over 2 million dollars was recovered.

In March 1945, The Provost Marshal General cooperated with the Bureau of Customs in an effort to intercept and recover stolen Government property being mailed from overseas to persons in the United States. A machine known as the "inspectoscope" was installed in the New York and San Francisco customs ports. This machine permitted examination of the contents of a package without opening it. In this way, a crew of five men could examine 35,000 parcels each month compared with approximately 3,000 packages a month without use of the machine. Additional machines will probably be installed at other customs ports handling a large volume of mailed parcels.

In July 1944, a procedure was established for utilizing fingerprint records of the Federal Bureau of Investigation to assist in the apprehension of absentees, deserters, and escaped military prisoners. The names of those wanted by the Army were submitted by the Provost Marshal General to the Bureau which marked the individual finger print file. Whenever the fingerprint checking system revealed the whereabouts of an individual "wanted by PMGO" notice was given to The Provost Marshal General who forwarded the information to the appropriate service command to apprehend the individual. Under this procedure more than 20,000 out of 32,000 cases reported to the Bureau were returned to military control. The Federal Bureau of Investigation also assisted in the actual apprehension of Army deserters. During the year this assistance was requested in 4,000 cases, of which 1,200 were returned to military control through the efforts of the Bureau or of other investigation agencies.

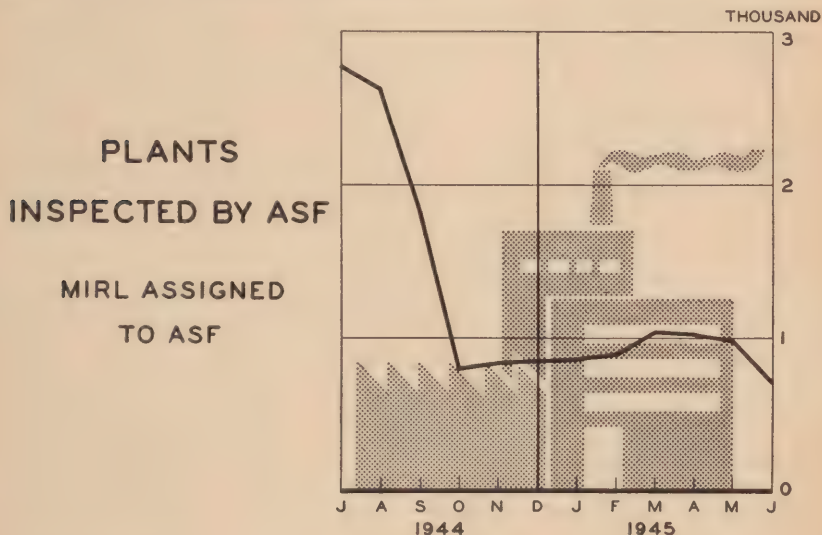
In collaboration with the Canadian Government, 459 Canadian absentee cases out of a total of 463 referred to The Provost Marshal General were disposed of.

A Field Manual on criminal investigation was published and distributed throughout the Army during the year.

The number of military police battalions assigned to the various service commands increased from 18 to 29 during the year. There were 4 such battalions in the Second, Sixth, and Ninth Service Commands; 3 in the First, Third, Fourth, and Fifth; 2 in the Seventh and Eighth; and 1 in the Military District of Washington. Military police continued to ride all through-trains in the United States to check the conduct of military personnel, and they supplemented the work of

civilian authorities in railroad stations in the large cities. The work of military police units was inspected by 16 officers under the supervision of The Provost Marshal General. Six of these officers operated out of Washington and the remaining out of service command headquarters. During the year, these officers inspected more than 5,000 trains and 5,000 railroad and bus stations.

Special efforts were made during the year to bring more knowledge about the work of military police to the attention of the public as well as to soldiers. Articles appeared in various magazines and in publications of the Army. The military policemen as traffic director and as guarantor of proper military conduct by all military personnel came to be more widely appreciated.



Internal Security

The effort to reduce internal security operations continued during the fiscal year 1945. The number of important production plants inspected by the Army Service Forces declined from 2,851 on 1 July 1945 to 698 on 30 June 1945. At the peak of internal security activity in May 1943, there were over 16,000 plants on the Master Inspection Responsibility List. A cut of 800 plants was made in September and another of 1,000 in October 1944. After VE-day another large cut of 300 was made. The reductions resulted in savings of personnel in the various internal security and personnel security programs both in the Office of The Provost Marshal General in Washington and in the offices of services commands in the field.

After the defeat of Germany only those facilities continued to be inspected by the War Department whose loss would create a serious interruption in the war effort against Japan. Modifications, reducing security requirements, were made in the agreements between the War Department and the Bureau of Mines, the Federal Power Commission, and the Association of American Railroads. Fire protection efforts were emphasized during the year because of the great quantities of supplies in storage in the United States. There were only 23 major

fires during the year at high priority plants working for the War Department, with an average loss of \$400,000.

The ASF Safety Program, operated under the supervision of The Provost Marshal General, was intensified in 1945. The program was expanded to include all ASF military personnel and to provide assistance to Ground Forces troops in training in the United States. The accident frequency rate for all military personnel (except Air Forces) in July 1944 was 61.4 injuries per thousand persons per year. By June 1945 this figure had been reduced to 50.8 per 1,000 persons per year. Prisoners of war were also included in the safety program. As a result, accident frequency rates among prisoners were reduced 50 percent. In January 1945, all oversea theaters were informed of the need to increase their accident prevention activities and were offered the assistance of safety personnel from the ASF. Thereafter, a number of safety engineers were assigned to oversea theaters and a considerable volume of safety literature was sent overseas at the request of commanders.

The Ordnance safety record was especially outstanding. In July 1944 the accident rate at Government-owned ordnance installations was 5.6 per million man-hours. By June 1945, this rate had dropped to 4 million man-hours, the lowest for all American manufacturing industries. Meritorious safety achievement cards and certificates of merit were issued to supervisors and foremen whose departments and sections had a year without a lost-time accident. On Army construction jobs, fatal injuries were reduced 67 percent during the year and lost-time injuries were reduced 69 percent.

The National Safety Council presented its Distinguished Service to Safety Award to the Army Services Forces for its record in the first 6 months of 1944 at the National Safety Congress and Exposition in October 1944. In June 1945, the ASF was given the same award for the second time because of its continued success in the period from July to December 1944.

Preparations in the United States for counter fifth column activity and any war disaster were suspended in 1944. Preparations were also made to abandon passive protection measures after VE-day. The number of counterintelligence investigations in the United States was also greatly reduced in 1945. At the beginning of the fiscal year, loyalty investigations numbered about 40,000 a month; complete investigations where there was a suspicion of possible disloyal activity numbered about 1,200. By the end of the year loyalty investigations had been reduced to a monthly total of 20,000 and complete investigations to 1,500. Investigations of personnel employed in industrial plants were limited to selected vital war facilities. Increased security efforts were taken, however, at ports of embarkation. The War Department also performed loyalty investigations on behalf of the United Nations Relief and Rehabilitation Administration, the Office of Strategic Services, and the Foreign Economic Administration of persons assigned to oversea activities.

As a result of loyalty investigations, some 160 suspensions in industrial employment were ordered during the year to prevent access of suspected subversives to vital war production information. The Industrial Employment Review Board jointly representing the Navy, the Army Air Forces, and the Army Service Forces continued to hear

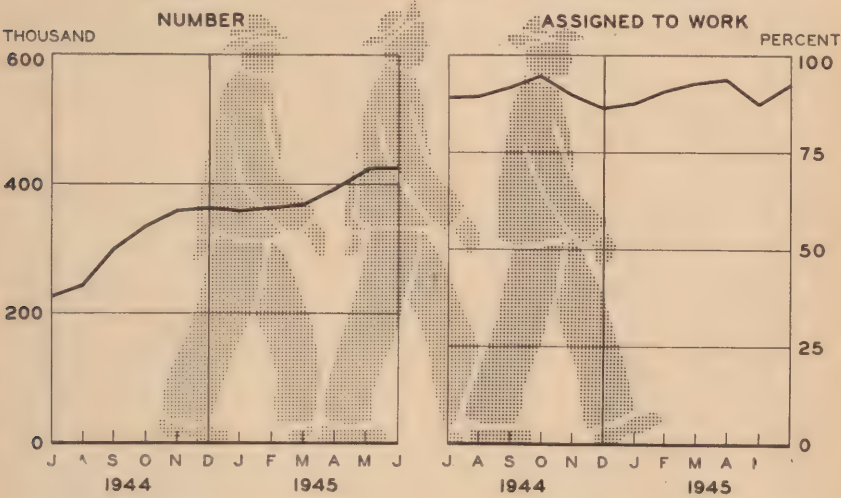
appeals from these suspensions. Appeal branches of the board were established in Chicago and New York City in order to expedite the consideration of appeals.

In September 1944, the voluntary induction of Japanese aliens was permitted in the Army of the United States after clearance by The Provost Marshal General. In addition, since July 1944, 3,325 American citizens of Japanese ancestry have been investigated for service in the Army and 2,698 accepted.

Prisoners of War

The number of enemy prisoners of war on hand in the United States more than doubled during the fiscal year 1945. On 1 July 1944 there were 197,000 German, Italian, and Japanese prisoners of war in this country. By 30 June 1945, this number had increased to

ENEMY PRISONERS OF WAR IN U. S.



over 425,000, almost the entire increase being Germans. Between 1 July and 30 November 1944, more than 150,000 German prisoners were shipped to the United States. These prisoners were captured after the Allied break-through south of Rome in May 1944, and after the Allied invasions of France in June and August 1944.

Another 60,000 captured prisoners were brought to the United States in April and May 1945, just as the war in Europe came to an end. The number of prisoners in Allied hands both on the Continent and in England was so large that they created great problems in care for Allied forces overseas. The additional prisoners were brought to this country both in order to relieve the burden of care for the Allied Supreme Command and to provide additional workers to meet labor shortages in the United States.

At the close of the year there were 156 base and 377 branch prisoner of war camps located throughout the United States in every state except Vermont, North Dakota, Montana, and Nevada. Service commands were authorized during the year to construct small branch

prisoner of war camps in order to distribute men in the vicinity of work opportunities.

During the year as a whole some 15,400,000 man-days of labor were performed by prisoners on private contracts and nearly 32 million man-days were performed on military installations. The employment of prisoners under private contract continued to be determined by the War Manpower Commission. Contractors were required to pay the prevailing wage for prisoner of war labor to the U. S. Treasury while prisoners received their 80 cents to \$1.20 a day for work performed. Military commanders and contractors throughout the country continued to express satisfaction with the performance of prisoner of war labor on all jobs to which they were assigned.

Continuing attention was given during the year to providing useful work for all available German prisoners. In accordance with the terms of the Geneva Convention, officers and noncommissioned officers were not required to perform work against their will. Prisoners who could not prove their status as noncommissioned officers were classified as privates and required to work. This added nearly 5,000 prisoners to the total available for work. During the course of the year the proportion of prisoners available for work and gainfully employed varied from 86 to 94 percent. In order to insure that maximum benefit was derived from prisoner of war labor, prisoners were carefully screened and classified by previous work experience. An effort was made to assign prisoners in accordance with their abilities and capacities. The productivity of prisoner of war labor was further increased by giving post commanders authority to punish malingering. After the end of the war with Germany, it was decided that German and Italian prisoners might be used on any labor directly concerned with the Japanese war effort. Previously, under the terms of the Geneva Convention certain tasks such as loading munitions could not be performed by prisoners of war. These provisions did not apply in the war against Japan.

In June, it was decided that German prisoners of war would be returned to the Continent as rapidly as the labor situation in the United States permitted. Plans were prepared for complete evacuation of German prisoners from the United States early in the calendar year 1946, if possible. It was War Department policy to employ civilians in preference to prisoners of war whenever civilian labor was available. Particular care was exercised to insure that prisoners of war were not used in preference to discharged American veterans.

The most vexatious prisoner of war problem in the United States during the fiscal year was that of food. As more and more limitations in available foodstuffs were imposed upon the civilian populations, much criticism arose that German prisoners of war were being fed on a much more generous scale than American civilians. Under the terms of the Geneva Convention the United States Government was required to provide prisoners of war with a ration equal in quantity and quality to that provided American troops at base camps. This requirement of the Geneva Convention became increasingly objectionable as evidence was received from Allied armies that the German Government was not living up to its obligations under the Convention. The Judge Advocate General ruled that the requirements of the Geneva Convention did not contemplate identical rations for prisoners

of war. Accordingly, it was decided that if rations for the prisoners met the standards of the National Research Council used by The Quartermaster General in preparing menus, the legal obligations of the United States would be met. Thereafter, The Provost Marshal General, The Quartermaster General, and The Surgeon General collaborated in preparing appropriate menus for prisoners with the required caloric content. Substitutes were to be given prisoners for all critical food items. Additional directives were issued subsequently to reinforce this basic policy.

Towards the end of the year the War Department began to receive complaints from users of prisoner labor that prisoners were being inadequately fed. Prisoners were said to be performing their work inefficiently because they were not receiving enough food. There was little justification for these complaints.

First the Russian and then the Allied capture of German territory brought many revelations about conditions in prison camps. Most newspaper accounts failed to differentiate between three different types of internment camps operated by the German Government. Personal investigation by The Provost Marshal General of the Army Service Forces indicated that internment camps for American and British citizens were, in general, well managed and that internees were well treated. Prisoner of war camps for American and British soldiers met the standards of the Geneva Convention but in the last months of the war definitely fell below the American conception of proper treatment of prisoners of war. In the third place, German concentration camps for political prisoners and slave labor were apparently operated under a systematic effort to starve inmates to death. The conditions revealed by the American press were mainly those obtaining in the third type of internment camp.

Two inquiries into treatment of German prisoners of war were made by the House Committee on Military Affairs. Both reports of the Committee approved the War Department policy of observing strictly the provisions of the Geneva Convention. The second report concluded that if American promises of good treatment for German prisoners had not been true and believed, "victory would have been slower and harder, and a far greater number of Americans killed."

Enemy protected personnel were distributed as equitably as possible among service commands and a pool was established at one camp for surplus protected personnel. Each service command was given a quota of 2 medical officers, 1 dentist, 1 chaplain, and 6 enlisted medical men for each 1,000 prisoners of war. A central prisoner of war fund was established during the year to control payment and settlement of accounts of prisoners of war. Articles which were not readily available to the civilian population were eliminated from all prisoner of war canteens. The "no work—no eat" policy was extended during the year. Any enlisted prisoner of war refusing to work or striking on a job was placed upon a bread and water diet until he was ready to engage actively on assigned jobs. The Nazi salute was abolished and all swastika flags were confiscated. The display of Nazi or Fascist emblems or pictures of the leaders of those parties was forbidden.

Persistent efforts were made by The Provost Marshal General during the year to present to the American public the true facts about the War Department's treatment of prisoners and the contribution of

these prisoners to national production. A continuing invitation was extended to all accredited newspaper writers and radio commentators to inspect prisoner of war camps and to obtain accurate information regarding prisoners of war. Many newspaper and magazine articles resulted.

The policy of restricting the number of guards for prisoners of war in order to free soldiers for combat duty was continued during the year. Selected prisoners were employed without guards during the daylight hours in areas where military personnel were regularly on duty or where frequent counts were made by supervisors. Where guards were needed, a standard ratio of one guard to eight prisoners employed on private contract projects was adopted. Escapes increased during the year from a cumulative total of 426 at the beginning of the year to over 1,800 on 30 June 1945. Most escaped prisoners of war were apprehended in the vicinity of their camps. At any time the number of prisoners at large was never great. For example, on 15 June 1945 there were only 23 uncaptured German prisoners throughout the United States. By the end of the year there had not been a single report of sabotage or violent crime committed by an escaped prisoner of war.

Censorship of prisoner of war mail was relaxed during the year. All mail sent out of the country continued to be censored by the Office of Censorship. Seventy-seven prisoners were sentenced by general courts martial during the year, the sentences ranging from imprisonment for 1 year to death. Forty-three prisoners committed suicide, one Italian prisoner was fatally assaulted by American troops, two prisoners were killed in disputes with other prisoners, six prisoners were shot attempting to escape, and seventy were killed in various accidents.

A total of 2,181 German sick and wounded prisoners together with 102 protected personnel were returned to Germany between September 1943 and January 1945. In exchange, the United States received 809 American sick and wounded soldiers and 77 protected personnel. While the number of American prisoners of war repatriated from Germany was small in comparison to German prisoners returned to Germany, the numbers were in proportion to the total number of prisoners of war held by the two governments.

At the beginning of the fiscal year The Provost Marshal General began to direct a program for reeducation of prisoners of war. The purpose of this program was to engender an attitude of respect for American institutions and traditions among prisoners. Some 226 officers and 111 enlisted men were trained for assignment to such work at prisoner of war camps and service command headquarters.

Educational programs at prisoner of war camps were encouraged, with emphasis upon the study of English, American history and civics, commercial geography, and other subjects indicating the strength and power of America. By the end of the year, 91 colleges and universities were providing books and other facilities to some 112 prisoner of war camps. In addition, 14 universities gave approved correspondence courses to prisoners at the expense of the prisoner. Study courses of instruction in English were prepared and 100,000 copies were being distributed at the end of the year. Selected film programs were presented twice a week at each camp. A national prisoner of war magazine, "Der Ruf" (The Call), was prepared by

anti-Nazi prisoners at a special camp and sold at prisoner of war camp canteens. The periodical was distributed twice each month in an 8-page edition. Beginning with an initial circulation of 10,000 copies, the magazine published 35,000 copies for the eighth issue. A special edition was published after V-E Day with a pictorial supplement depicting the rise and fall of national socialism. Special books for prisoners of war were published by the Infantry Journal. Office of War Information pamphlets were also distributed—one of these concerned atrocities committed in German concentration camps. By the end of the year, there were several indications of partial accomplishment of the purposes of the reeducation program. In general, prisoner reception of the magazine "Der Ruf" was enthusiastic, although it was violently condemned by certain prisoners. In February 1945, nearly 1,400 prisoners in a single camp signed a petition to the German people advocating immediate peace with the Allies. After atrocity films had been shown at an officers' camp, over \$20,000 was donated by prisoners of war for the relief of victims of German atrocities regardless of race, color, or creed. In addition, many camp commanders reported an increasing interest in the United States among prisoners of war and an increased attendance at religious service.

Prisoner of War Information Service

At the end of June 1945, official reports from enemy nations indicated that a total of 76,468 American prisoners of war had been captured by Germany or Japan. During the fiscal year the number of American prisoners in German hands increased 37,225, while those in Japanese hands decreased 4,225. All American prisoners were immediately surrendered upon the cessation of hostilities in Europe. The American prisoners of war recovered from the Japanese were freed by the advancing military campaign in the Philippine Islands.

As soon as any information about the recovery of American prisoners of war was forwarded to the United States, this information was relayed to the next of kin. Recovered American prisoners were given preference in return to the United States by air and sea.

Italian Service Units

On 30 September 1944, the training of Italian Service Units at training centers was completed or discontinued. All units were assigned to various stations in the United States for "on-the-job" training. No further effort was made to train units for dispatch overseas. Rather, these units were needed in the United States to supplement the personnel available within the ASF. Training was continued in connection with the jobs being performed in order to improve operations.

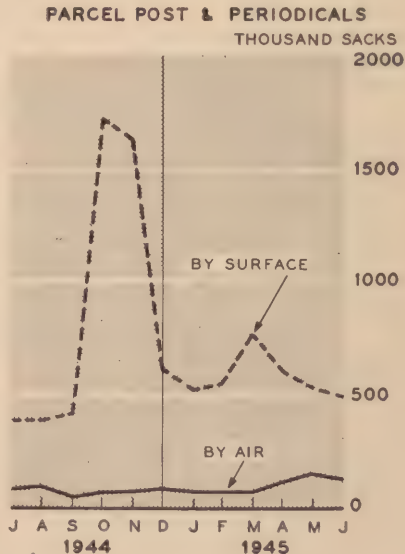
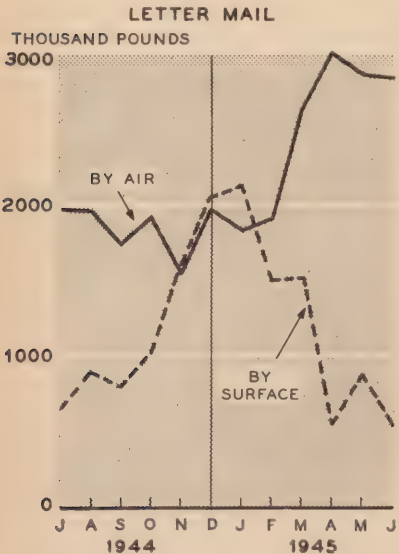
The project of translating Field and Technical Manuals and Training Films was completed, but publication was discontinued in the autumn of 1944. Altogether, 28 Field and Technical Manuals, 30 Film Strips, 33 Training Films, and 4 Training Circulars were translated into Italian, published, and distributed. English language instruction was reduced from 6 hours a week to 5 hours and later to 2 hours with more stress on the use of visual language training aids and on-the-job instruction in English. A sample survey of the educational

background of enlisted members of Italian Service Units showed 85 percent had not gone beyond grammar school, 13 percent had attended high school, and 2 percent had attended college.

Italian Service Units during the year were used at ports, depots, arsenals, and various installations of service commands. Many units originally assigned to the Chief of Engineers were released and re-organized as Quartermaster service companies. While the restrictions on handling ammunition were not lifted, in certain instances specific temporary authority was granted to use Italian Service Units in handling and loading ammunition. In a few other instances specific authority was granted to employ members of Italian Service Units in cafeterias and officers' messes where the local civilian labor situation was particularly acute. Italian Service Units engaged in wide varieties of tasks from loading and unloading railway cars and ships, warehousing, salvaging lumber, and other materials to working in laundries and repairing military equipment. As of 30 June 1945, there were 195 Italian Service Units divided as follows: ports of embarkation and transportation installations, 72; Ordnance depots and arsenals, 46; Quartermaster depots, 24; Engineer installations, 10; Signal Corps, 4; Ninth Service Command, 15; Fifth Service Command, 7; Second Service Command, 6; Fourth Service Command, 4; Third Service Command, 2; miscellaneous, 5.

The total enlisted strength of Italian Service Units declined from 33,600 to 31,200 during the year. The loss resulted from deaths, returns to prisoner of war camps for cause, return to prisoner of war camps because of mental or physical disability, and repatriation. The officer strength increased somewhat during the year from 1,051 to more than 1,100.

MAIL DISPATCHED OVERSEAS



Army Postal Service

The volume of mail dispatched overseas increased steadily during the fiscal year 1945. Air mail expanded from 1,400,000 pounds in July, 1944, to 2 million pounds in June 1945. Mail hauled by surface vessels grew from 600,000 pounds in July to a peak of 1,700,000 pounds in January, and declined thereafter. Parcel post, as might be expected, reached its peak in October and November during the Christmas mail, but was still over 100,000 sacks larger in June 1945 than in July 1944.

The Army Postal Service continued its efforts during 1945 to speed up the transmission of mail. The progress made was illustrated by the figures in January and April 1945, showing average time required for the delivery of letter mail from all parts of the United States.

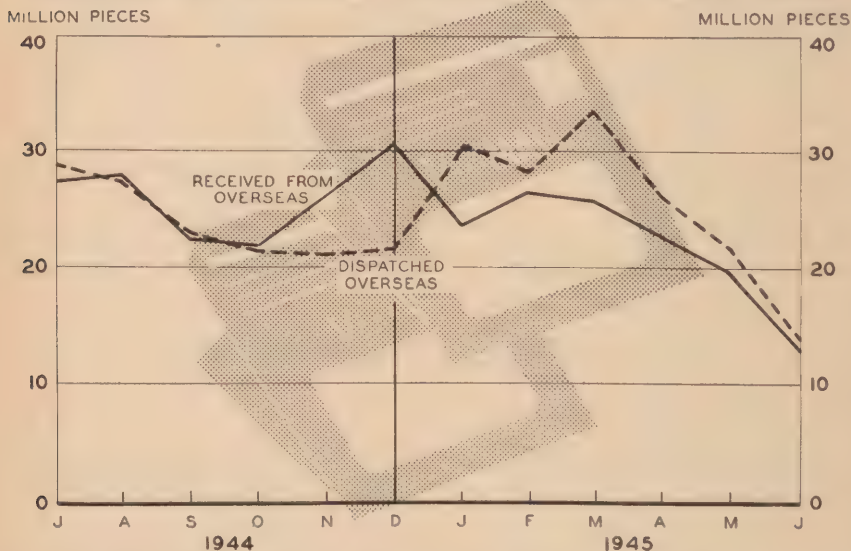
	<i>January 1945 average days</i>	<i>April 1945 average days</i>
England:		
V-mail.....	11. 1	7. 7
Air mail.....	16. 8	8. 8
Ordinary letters.....	23. 5	12. 5
European Continent:		
V-mail.....	12. 9	12. 1
Air mail.....	28. 2	10. 2
Ordinary letters.....	29. 0	13. 9
Middle East:		
V-mail.....	8. 9	6. 1
Air mail.....	11. 5	6. 4
Ordinary letters.....	20. 7	8. 0
India-Burma:		
Air mail.....	14. 4	9. 8
Ordinary letters.....	15. 0	14. 9
Central Pacific:		
V-mail.....	9. 2	8. 5
Air mail.....	9. 5	5. 7
South Pacific:		
V-mail.....	8. 8	8. 8
Air mail.....	12. 8	7. 3

Army air-mail service was for a considerable time regulated on the basis of so many pounds carried by each transport plane going overseas. This did not take into account the volume of mail to be transported or variations in the strength of troops served. It proved a highly unsatisfactory method of operation. Beginning in June 1944, oversea commanders were authorized to fix a certain percentage of the total air shipments to the theater which might be devoted to the carriage of mail. Operations under this plan in the fiscal year 1945 proved in general to be excellent. In most cases, sufficient space was allocated each month to accommodate all air mail and for some commands most of the letter mail. The principal exceptions were the European Theater of Operations and the Mediterranean Theater of Operations during the winter months, when weather conditions curtailed all theater air transport. After 1 April 1945, sufficient air space was allocated by the European Theater to transport all air mail accumulating each month. Air-mail service to the Mediterranean Theater was sufficient to meet all requirements by utilizing space available on

ferried tactical and other Government aircraft as well as space available on transport planes when other cargo was lacking.

Despite the adequacy of air-mail capacity, the program was continued to keep the use of V-mail at the highest possible level. During the year more than 303 million letters sent from the United States and more than 290 million letters written overseas were reduced to microfilm. This was an increase of 12 percent in the dispatch and 8 percent in the receipt of V-mail over the previous fiscal year. On the whole, V-mail, however, remained unpopular. It was generally criticized as too impersonal, too abbreviated in writing space, too much trouble to address in two places, and too difficult to read. Nonetheless, in March 1945, over 59 million V-mail letters were sent and received, only a little short of the peak of nearly 64 million letters

VOLUME OF V-MAIL DURING FISCAL YEAR 1945



in April 1944. After March, however, the volume steadily declined, partly because of the improved air-mail service. Since all air mail for overseas theaters was being transferred by air at the end of the year, its delivery was faster than V-mail by the amount of time required for photographic processing.

V-mail served a very useful purpose during the period of expanding overseas troop strength and the strain on air transport. Its promotion was a notable accomplishment made possible through the cooperation of the National Advertising Council, the Office of War Information, various civic and commercial organizations, a host of advertisers, and the armed forces.

A special problem was presented to the Army Postal Service in the handling of soldier voting ballots in the general election of 1944. Overseas theaters, ports of embarkation in the United States, and all War Department transportation agencies were advised of their responsibility for prompt handling of ballot materials. A uniform method of

handling, separating, recording, and dispatching ballot mail within Army post offices was devised. This was largely responsible for the prompt delivery of ballots to the voting officials of the several states. During the months of August, September, and October 1944, post offices dispatched 116,000 pounds of ballot mail to overseas areas. In the same 3 months returned ballot mail amounted to 53,000 pounds.

The mailing of 1944 Christmas packages to overseas troops was limited to the period from 15 September to 15 October when the usual request from the addressee was waived. The usual limitations of 5 pounds in weight, 15 inches in length, and 36 inches in length and girth combined prevailed. The Army Service Forces dispatched 3.3 million sacks of Christmas parcels to overseas troops, of which 93 percent was delivered to Army post offices on or before Christmas Day. The same provisions will be made for the handling of Christmas 1945 mail, when a total volume of 3 million sacks is anticipated. Because of improvements in transportation and other facilities, it is anticipated that even better results will be obtained for the coming Christmas.

Because of the great shift in volume of mail from the Atlantic to the Pacific seaboard following VE-day, it became essential to enlarge the space for handling overseas mail on the west coast. Since the necessary space was not available in the San Francisco area, the construction of a building containing 300,000 square feet of working space was begun at Camp Knight, Oakland, California. This building, to be completed by 1 September 1945, would provide adequate postal facilities to handle the mail for troops in the Pacific.

Records Administration

A records administration program embracing the entire military establishment was begun during the fiscal year 1945 with the issuance of War Department Circular 416, 1944. During the previous year surveys had been made and schedules of disposition had been prepared for the records in ASF Headquarters. Arrangements had also been made for the retirement of backlogs of noncurrent records accumulated by the Army Air Forces, the Army Ground Forces, and other War Department facilities. Under the new records administration program, the chief emphasis was placed upon the disposition of files accumulating during the present war period. Arrangements were made for the centralization of special types of noncurrent records having a permanent or long-time value. All other records were to be held by records depots created in each of the service commands.

In order to insure the success of the records program, some 1,500 records administrators were designated throughout the United States with full responsibility for activities within their respective jurisdiction. A manual was prepared for their guidance and training courses begun to help them in their job. The new manual provided one War Department medium for the publication of authority to dispose of types of files common to more than one element of the military establishment. Other publications were being prepared at the end of the year on the use and techniques of microfilming and on filing procedures.

All noncurrent files which could not be immediately disposed of at installations in the United States were to be shipped to the records depot in each service command. The procedure to be followed by

these depots was expected to reduce files to not more than 10 to 15 percent of their original volume. Such processing was to be accomplished within 5 years after the close of the war, at which time the remaining records were to be transferred to permanent archival depositories. A survey of the quantity of files transferrable to service command records depots disclosed approximately 35,000 file drawers in storage on 1 January 1945 and active files totaling over 1,300,000 drawers. More than 50 percent of the noncurrent files were to be disposed of at the installations which accumulated them. Based upon figures current at the end of the fiscal year, it was estimated that during the first 6 months of operation the service command depots would accumulate approximately 65,000 file drawers. Depot operations were standardized through the issuance of ASF Manual M 810. (Records Depot Organization and Operation).

Special depositories previously created for the centralization of certain types of noncurrent records were expanded during the year. The War Department Records Branch of The Adjutant General's Office was responsible for the custody of all noncurrent records from War Department agencies in the Military District of Washington. By the end of the fiscal year, this branch had received 70,000 file drawers of records which had been reduced by 50 percent. These records were to be transferred eventually to the National Archives. The Demobilized Personnel Records Branch of the Adjutant General's Office at High Point, North Carolina, handled all records of personnel separated from the Army. The Discontinued Projects Branch at Omaha, Nebraska, handled CCC records and civilian personnel records. The Organization Records Branch at Savannah, Georgia, handled records of tactical organizations. In addition, centralized custody of new categories of specialized records was established during the year. A Contract Records Branch was activated at St. Louis to receive and maintain noncurrent war contracts for the ASF. Plans were also made to centralize all noncurrent clinical records in the same city. Disbursing officers money accounts were centralized in Indianapolis under the custody of the Fiscal Director.

In 19 oversea theaters and commands temporary records depots were established for the preliminary weeding out and orderly return of file materials to the United States. Personnel for five of these oversea areas were provided by the Records Division of The Adjutant General's Office.

An understanding of the magnitude of the records program might be gleaned from the volume of files currently in existence throughout the military establishment. This was conservatively estimated to number 2.5 million file drawers. Of these, only an estimated 700,000 contained records of permanent value or records which were required to be preserved for an indefinite period of time. Under the Records Administration Program all of this latter group were to be retired eventually to the custody of The Adjutant General. Over 200,000 file drawers of materials had already been concentrated in records depositories. At the end of the fiscal year, there remained some 500,000 file drawers, constituting that part of the current files in use in headquarters and in the field, to be retired at some future date. The balance of existing records constituted those of less permanent importance which, through continuing evaluation and screening, could

be reduced to a small fraction of their bulk. The initial reduction was the job of the already designated records administrators, while further processing would be provided in the records depots.

During the fiscal year 1945, nearly 475,000 file drawers of useless files were destroyed under the records program.

Publications

The Publication Division of The Adjutant General's Office made a number of improvements during the year in the publications service rendered the War Department. The average time required for processing a publication through the division in June 1944, was 5 days, while in June 1945, it had been reduced to less than 3 days. Careful checks upon all stages of the publication process were maintained in order to make sure that delays were prevented. In order to curtail production delays, existing publications were reviewed to determine the need for reprints. This practice decreased the number of items placed on back order pending the determination by the sponsoring agency of the need for revisions and changes in the publication.

A new procedure was introduced for the reproduction of Tables of Organization and Equipment by The Pentagon reproduction plant. Typewritten copy on standard form was submitted by the preparing agency for photographic reproduction. Negatives were then furnished the Government Printing Office for production of copies required in the United States. Other negatives were shipped by air to oversea theaters for production there. This method made it possible to have Tables of Organization and Equipment for troop units available at any point on the globe 12 days after the manuscript was received in the Publication Division—a savings of from 30 to 90 days in the previous publication practice.

The Government Printing Office and commercial printers cooperated in speeding up the delivery of all publications. Four standard publication programs provided a regular method for handling 80 percent of the work of the division. Under the simultaneous printing program such publications as War Department Circulars, Army Regulations, Technical Bulletins, Supply Bulletins, Modification Work Orders, and others are reproduced on stereotyped mats and dispatched by air to commercial printers in cities where Adjutant General depots were located. Here, plates were made and the printed material was delivered promptly for distribution throughout the Army. Under this program the average delivering time to using agencies in the United States was reduced from 25 days to less than 10 days. Advance copies were also flown to oversea theaters for local production. As rapidly as facilities permit, stereotyped mats or negatives for these publications were to be sent overseas. The average number of copies printed under this program came to 25 million a month at the end of the year.

The catalog program begun in July 1944, reduced average delivery time from 50 to 35 days. Fifteen commercial printers under this program produced 100,000,000 copies of 5,000 supply catalogs and catalog sections. Under the forms program, War Department forms were simultaneously printed in six areas. The delivery time was reduced from 30 to 15 days. Since the inauguration of this program in October 1944, over 1 billion forms were reproduced. Lubrication orders were added in the program in March 1945. After that time these

orders were delivered on a 15- to 25-day schedule and the cost reduced from 30 cents to 2 cents each.

The Technical Manual program was established on 1 February 1945 to expedite the production and distribution of new training manuals, the textbooks of the Army. The Government Printing Office arranged with printers in New York to handle these publications, within certain mechanical specifications, and to make shipment within 21 days after receipt of the manuscript and art work. By 30 June 1945, some 4 million copies of new publications and more than 1 million reprints had been delivered or were in the process of delivery. The average time to destination for new publications was 26.4 days for The Pentagon and 32.2 days for the field. Under the old system, the average time varied from 45 to 90 days. This was the period lapsing between receipt of manuscript in the Publication Division to distribution of the manual. Printers for the program who met their deadlines were given a 10 percent bonus and without exception fulfilled their schedules. Transportation delays were the principal factor in rendering the actual physical delivery of manuals within 30 days from arrival in the Publication Division—the goal originally established.

A depot forms program was set up by the Government Printing Office on 3 March 1945. Under this program printers adjacent to AG depots were furnished reproducible material for popular forms. The depots then requisitioned forms directly from these printers as needed. At the end of the year, approximately 160 forms were reproduced under this program from more than 4,000 plates provided the printers.

An estimated 6,000 tons of publications and forms were handled by the Publication Division of The Adjutant General's Office each month. If it were not for the standard programs, this volume of printing could not have reached the field in an orderly and expeditious manner. Continuing efforts were made to save time in the reproduction and delivery of all printed materials. The AG depot in Omaha and the AG depot in Ogden were the only depots not serviced under the forms program and the simultaneous printing program by printers in the same city. Published materials were shipped overnight from Chicago to the Omaha depot by express. A scarcity of printers in Ogden did not permit local operations.

Since March 1945, continuing efforts have also been made to determine existing weaknesses in the publications system by having representatives of the Publication Division visit field establishments and determine the needs for improvements. Eight officers were furnished to fill key publications assignments in Europe and the Pacific and four other officers made special trips overseas. Beginning in April 1945, representatives of the Publication Division were stationed at various points in the United States to keep in close touch with commercial printers, AG publication depots, publication supply rooms of ports of embarkation, Army field printing plants, and post publication supply warehouses.

In order to improve the distribution of the great quantity of Army publications, operating procedures were greatly simplified. A central stock control system was established in July 1944, and improved throughout the year in order to provide continuous and accurate information about stock status in each publication depot. A stand-

ardized depot procedure was placed in effect which provided for shortage reports well in advance of the exhaustion of any item. In this way, there was sufficient time to determine need for reprint. At the close of the fiscal year approximately 90 percent of overseas requisitions for publications had been completed at the proper time for shipment. Domestic requisitions were, with few exceptions, processed at depots within 48 hours of their receipt. The number of depots in operation in the United States was reduced from 14 to 7. Teletype service between the Publication Division in Washington and each depot was installed in order that service on overseas requisitions might be expedited.

An automatic initial distribution of publications to all overseas theaters and to United States commands was begun on a formula basis. Distribution to Pacific commands was made directly from the Ogden depot with delivery accelerated from 30 to 60 days. The distribution formula was under constant study in order to eliminate the useless distribution of unneeded publications and forms to particular installations. The use of air transportation was increased during the year so that advance copies of essential publications and negatives and mats suitable for local production could be put in the hands of commanders within a matter of a few days rather than several weeks. The average daily cost of air mail postage from The Pentagon depot reached a peak of \$7,000 during March and April 1945. Some difficulty in the distribution of publications to the European Theater was experienced when the theater did not take advantage of automatic distribution until January 1945.

At the end of the fiscal year plans were made for the automatic distribution of all required publications and blank forms to troop units being redeployed through the United States to the Pacific. Necessary stocks were segregated in the Columbus and Omaha depots to meet the needs of this vast program. Requisitions covering all necessary publications and forms were developed for virtually all types of troop units. These requisitions were then kept current on a daily basis. As soon as a troop unit debarked in the United States, the appropriate requisition was forwarded to a depot for shipment of the publication to the unit at its assembly station. Publications would thus be on hand before the unit assembled after its men had had a 30-day stay at their homes.

Arrangements for a supply of publications to units being sent directly from Europe to the Pacific were completed several weeks before VE-day. Standard requisitions for troop units were regularly flown to overseas publication depots so that current publications would be provided these units. Shortages were shipped from the United States to the publication depots at the troops' destination to be marked for the unit and held pending its arrival.

The improvement in publication operations was illustrated by the record of The Pentagon depot. While the tonnage handled by this depot increased 10 percent during the fiscal year, the requisitions increased 25 percent, stock transfers 80 percent, and initial distribution 30 percent, the personnel strength declined 10 percent. This improvement in operation was the result of more efficient procedures for processing requisitions, for recording stock status, and for shipping publications.

At the end of the fiscal year 1944, the Publication Division of The Adjutant General's Office established a Field Printing Branch to supervise all Army field printing plants and to control expenditures for field printing. At that time there were 31 printing installations which were believed to be operating printing equipment in violation of existing Federal laws and regulations. All of these violations were eliminated before the end of the fiscal year and the number of field printing plants reduced from 57 to 34. Existing plants were established at strategic points to produce essential work for any element of the Army. As a result of increased efficiency and consolidation of equipment and the greater use of Government-owned facilities, the average monthly expenditures for contract field printing were reduced nearly 30 percent, while average plant operating costs were cut 14 percent.

Special plants were being established at the end of the year in Honolulu, Manila, and the China-Burma-India area. The Joint Committee on Printing of the Congress greatly assisted the work of The Adjutant General's Office during the year.

The work of the translation branch was extended during the year 1945 to include the translation of Army manuals into Italian, Spanish, Chinese, and Russian. Air Corps technical orders were translated into Russian for the Aviation Division of the Russian Purchasing Commission. Italian translators were obtained largely from Italian Service Unit personnel who volunteered to do the work. Many other translators had to be brought from overseas. In addition to the five basic languages, various manuals were translated into 18 other languages. Special printing characters for the various alphabets had to be found for these manuals. A special type was created solely to reproduce manuals in Burmese and Siamese. In order to have uniformity in communication procedures among the Allied nations, publications of the Combined Communications Board were translated and published in French, Italian, Chinese, Russian, Spanish, Portuguese, Swedish, Dutch, Polish, Czech, Norwegian, Greek, Turkish, Serbo-Croatian, and German. During the year translation of more than 1,000 manuscripts was completed.

The Pentagon reproduction plant of The Adjutant General's Office provided facilities for the immediate reproduction of recurring reports and other special jobs for War Department offices in Washington. The number of requisitions decreased from 71,000 to 70,000 a month during the year and of photograph process jobs from 148,000 to 136,000 a month. On the other hand, the number of impressions increased by 9 percent and the number of copies of photograph process jobs increased 49 percent. The elapsed time for handling duplication requisitions was cut during the year. In order to meet the emergency requirements of the War Department, the Pentagon plant established several records for rapid reproduction. On one job some 9,979 photostats were produced in 4½ hours in order to enable the payment on arrival in Boston of 7,000 American soldiers recently recovered from German prison camps. On another occasion, 300 copies of a 150-page procedural manual to be used in connection with the seizure of Montgomery Ward plants were printed and shipped within 24 hours.

Personnel Records

The Adjutant General's Office continued to maintain the centralized personnel records of the War Department and to prepare numerous periodic and special reports of personnel data. An important change in strength reporting was introduced by section II, War Department Circular 415, 1944, which provided for an "effective date of change" in all transfers of personnel. Under this procedure personnel were carried on the morning report of the organization from which transferred until the new organization had actually picked the individual up on its own morning report.

The Adjutant General's Office prepared 13 recurring reports on casualties. Four of these were weekly reports and seven were monthly. There were 20 recurring reports on officer strength of which 17 were monthly and 3 annual. These reports listed general statistical data, and occasionally specific information showing officers with procurement experience or with a specific language ability, for example. There were 34 recurring reports on enlisted strength, of which 33 were monthly and 1 quarterly. These showed a great many facts about enlisted men, including accessions and separations by age, state of residence, educational level, marital status, civilian occupation, etc. Forty-nine recurring strength reports, of which 40 were monthly, were used by all personnel planning agencies of the Army. Showing authorized and actual strength, these served as a guide for future needs of personnel and supply. The Adjutant General's Office prepared 3 recurring reports on decorations and awards, of which 2 were monthly and 1 was quarterly. Finally, there were 39 miscellaneous recurring reports of which 29 were monthly. These reported a wide range of information such as discharges by state, sample personnel data, and strength of component parts of the Army Service Forces. All of these reports were prepared from machine record data received from commands throughout the United States and overseas.

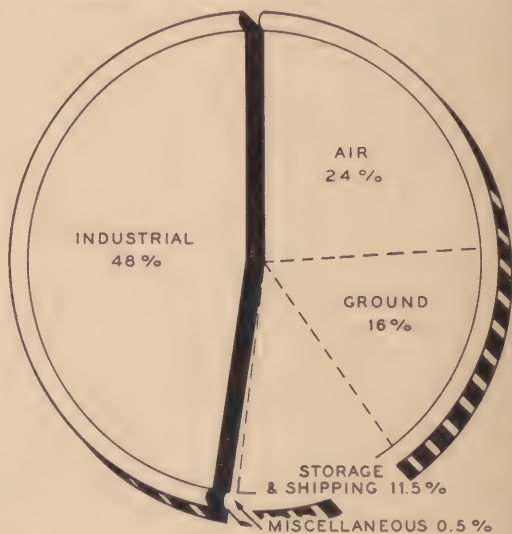
The Machine Records Branch of The Adjutant General's Office effected a considerable savings in personnel and equipment during the year. The total civilian employees in the Branch on 30 June 1945 numbered 370, approximately 56 percent of the strength in 1942. A program of systematic decentralization of processing functions whereby 75 percent of the basic cards were prepared in the field eliminated much unnecessary work in Washington. The consolidation of many recurring reports also brought economies in operation. For example, one publication, "Strength of the Army," included data previously provided in 30 separate reports.

Chapter 17. PHYSICAL PLANT

New Construction

In the fiscal year 1945 total new construction amounting to 678 million dollars was authorized, of which 367 million was for the construction of new installations to be used by the Army and 311 million was for the construction of new industrial facilities. This brought the total construction program of the Corps of Engineers since 1 July 1940 to 11.6 billion dollars. Construction put in place during the year amounted to 560 million dollars, bringing the total put in place since 1 July 1940 to 11.3 billion dollars.

**NEW
CONSTRUCTION
AUTHORIZED
FISCAL YEAR 1945**



New construction at military installations became necessary as changes occurred in military equipment, in military training, and in the work done within the United States. Airfields had to be expanded to accommodate heavier-type bombers and to enlarge air transport facilities. Developments in over-sea theaters disclosed the needs for changes in the training program and such new facilities had to be provided as model ships for amphibious training, model villages for infantry training, moving target ranges, and model transport planes for air transport training. The increased medical load borne by general hospitals and the decision to establish convalescent hospitals made it necessary to enlarge medical installations.

Of the new construction authorized at Army installations during the year, 168.8 million dollars was for the Air Forces, 117 million dollars was for Ground Forces facilities, and 77 was for shipping and

storage facilities. Miscellaneous construction activity accounted for the remainder. The use of very heavy bombers necessitated the lengthening and strengthening of landing strips at 19 airfields. Twenty-five additional hangars had to be provided for this type of bomber at 18 Air Forces installations. Because of the heavy gross loading of the planes, extra-heavy duty runways were built to accommodate the new loads. A total of 922 gunnery range positions were installed at 48 Air Forces stations to permit the year-around training of aircraft gunnery. A climatic hangar was begun at Eglin Field, Florida.

Additional housing facilities were constructed at Ground Forces posts to house WAC personnel. Many new training facilities were built including construction of oriental villages for training of troops scheduled to go to the Pacific. A disciplinary barracks for maximum security was begun at Camp Cook, California, to house Army prisoners; smaller disciplinary barracks were constructed at other establishments. In order to handle the mail load for the Pacific, a new postal center was constructed at Oakland, California, while an addition was necessary to the mail facilities in New York.

The expansion program for general hospitals called for the addition of 43,000 beds. Medical detachment barracks were converted to provide additional ward space, while the enlisted personnel were rehoused in prefabricated barracks or other facilities. New open and inclosed swimming pools were constructed for therapeutic treatment. Reconditioning facilities added during the year included physiotherapy work shops, class rooms for graphic arts and mechanical trades, and special gymnasium facilities as well as baseball diamonds, tennis courts, volley ball courts, and handball courts. The enlargement of medical facilities was estimated to cost some \$23,000,000, whereas new construction to accommodate 43,000 new beds would have cost at least \$120,000,000.

Convalescent hospitals were established at 12 Army posts by using station hospital facilities and by converting medical detachment barracks and other standard barracks to provide 49,800 beds. New recreational facilities were also constructed at these posts. The total cost of this expansion program was estimated at \$33,000,000.

New prisoner of war camps were constructed during the year to house 63,000 enlisted prisoners and 8,600 officer prisoners.

Storage and shipping facilities were increased by the construction of additional warehouses and of paved open storage areas. The approach of VE-day and the curtailment in shipment of ammunition to the European Theater required the construction of back-up storage areas to handle ammunition from loading plants pending shipment to the Pacific.

In order to handle the redeployment load as well as the discharge of soldiers, 23 personnel centers were eventually planned. The increased load at these centers and the importance of prompt processing entailed an expansion of existing facilities through the conversion of present buildings or the construction of additional ones.

No major new construction of seacoast defenses was initiated during the fiscal year. By 30 June 1945 all engineer construction of this program had been completed.

Plans and specifications for a 1,500-bed general hospital on the

island of Oahu, Territory of Hawaii, were completed during the year and construction was begun in July 1944. One major airfield outside the United States was completed during the year for the Air Transport Command. Requests for construction during the fiscal year where the cost exceeded \$1,000 continued to require the personal approval of the commanding general of a service command or the chief of technical service, and of the Commanding General.

The Commanding General, Army Air Forces, personally approved requests for Air Forces construction. Beginning 3 May 1945 all requests for construction were submitted for technical review to the Chief of Engineers before approval by the Commanding General, Army Service Forces, or the Commanding General, Army Air Forces. All construction under way on VE-day was reviewed to insure that it was essential for the conduct of the war against Japan.

Construction of new industrial facilities was necessary in order to expand ammunition production during the year. In most cases the new facilities were additions to existing plant and the installation of new equipment. New plant facilities were provided for expanding production of dry batteries, radio tubes, and cable for the Signal Corps, tractor engines for the Corps of Engineers, and new items for the Chemical Warfare Service.

In order to make use of equipment installed at plants no longer required for war production, dismantling operations were undertaken at one War Department-owned TNT plant and at two Defense Plant Corporation-owned explosive plants. This equipment was dismantled, reconditioned, and installed at other industrial installations, thereby reducing the load on equipment and machine tool manufacturers. A major hazard in the dismantling of explosive plants was the removal of deposits of explosive and toxic materials which had accumulated on the ground, in the buildings, or on the equipment. Decontamination was necessary in order to insure safe dismantling and handling of the equipment.

The inventories of all industrial facilities owned by the War Department were in large part brought up to date during the fiscal year in order to show additions to industrial plants and new equipment. These reports were of great value in studying possible conversion of inactive installations. The advisory Board on Utilization of Surplus Industrial Facilities prepared 55 reports on industrial installations for submission to the Reconstruction Finance Corporation. Reports on other plants were being prepared at the end of the year. Members of the Board gave technical advice to the Surplus Property Board and other governmental agencies interested in the disposal of industrial facilities.

The War Department, through the ASF, also reviewed projects proposed by other Government or private agencies to construct hospitals, schools, recreation facilities, utilities, and commercial buildings which would primarily serve military or civilian personnel of the War Department. The Federal Works Agency in the summer of 1944 decided to submit all projects related to Army activities to the War Department for certification. There were fewer such projects in 1945, the ASF reviewing some 217 with a value of \$36,600,000. While there was some need for additional community facilities, these were expected to be met by December 1945.

Much work was done throughout the year in an effort to standardize and improve construction practices. Three laboratories for the development of pavement design were established in the United States. Work was also begun to modernize the policies and standards for airfield lay-outs at all types of air installations. Preliminary agreement was reached with the Navy Department on the development of standard specifications for some 300 items in common use. Nineteen joint Army-Navy specifications were agreed upon in 1944.

With the greater availability of materials after VE-day new guide specifications on construction were begun. Some substitute materials used during the war proved their value and dependability for use in permanent projects, particularly fiber glass, various paint compounds, passivating treatment for zinc-coated steel, and certain synthetics and plastics.

Engineering studies were made during the year to determine what posts, camps, and stations had the best facilities for use in the postwar military establishment. All posts to be retained in the postwar era were encouraged to establish planning boards. Sample master plans as guides for Ground Forces installations and for Air Forces stations were prepared. A complete revision of the Engineering Manual for peacetime military construction was begun.

Pavement evaluation tests, begun in 1943, to determine the carrying capacities of airfield pavement at some 600 airfields, were completed early in 1945. These tests provide an extremely valuable summary of all pavement features of fields and are being kept up-to-date with current information on new constructional changes. Investigations were also made to determine the effect of frost on stability of runways under various conditions and locations. Many other types of engineering studies on soils, drainage, air conditioning, water supply, sewage disposal and treatment, prevention of erosion, and reduction of dust were undertaken. Standard plans and specifications were prepared for such items as indoor and outdoor swimming pools, and 1,800-man prisoner of war camp, standard fixed laundries, training pools for the Army Ground Forces, hangars for very heavy bombers, and various oversea facilities.

Real Estate

Acquisition of real estate was held to a minimum during the year. As far as possible, new needs were met by utilizing property already under the control of the Government. Title to some 45,000 acres of land were acquired from private ownership, in addition to lands acquired by transfer from other Government agencies in 1945. This land was used principally for the airfield expansion program, for plant facilities for producing heavy shells and bombs, and for miscellaneous small additions to existing hospital facilities; leased land in Hawaii on which permanent improvements had been constructed was also required.

By 30 June 1945 there were about 16,600 War Department leases in effect, with an additional 1,124 leases in process of negotiation. The total annual rental amounted to \$51,000,000. During the year there was a net decrease of 2,800 properties leased. Annual rentals were reduced almost \$1,500,000.

Over \$22,000,000 was distributed to land owners bringing total dis-

bursements for the purchase of land on 30 June to \$340,300,000. Of the 78,000 tracts under option or in condemnation, full payment had been made on 86 percent of the tracts, and 96 percent of the total amount obligated for purchase of land had been disbursed.

Since the War Department reached the peak of its land acquisition program in 1944, the emphasis in 1945 was placed upon fullest possible utilization of existing real estate. A program of periodic inspections was carried out to insure efficient use of real property. Failures to utilize property to the fullest were called to the attention of the using service and recommendations made for better utilization or discontinuance of the installation. These inspections resulted in a savings of almost \$4,000,000 in annual rentals.

Utilization and Disposition of Command Installations

A continuous effort was made during the fiscal year 1945 to utilize command installations at this maximum efficiency. Section 15 of the Monthly Progress Report entitled "Utilization of Command Installations," which was initiated in March 1944, was continued and greatly improved during the year. The information contained in this publication was obtained monthly from service commanders, technical services, staff divisions of Army Service Forces, and from the Army Ground Forces and the Army Air Forces. It was evaluated and published each month to reflect latest available plans from the War Department General Staff and contained information on the type and strength of activities being carried on at each major installation. The report was used as a planning document by the War Department and the three major commands, and proved an invaluable asset in the efficient utilization of command installations.

As of 30 June 1945, Section 15 Monthly Progress Report, contained a list of AGF and ASF installations with a total housing capacity (normal housing for enlisted men at 60 square feet per man) of 2,938,501 men. Some 2,485,000 men were divided among 155 posts; the remainder was at ports of embarkation general hospitals, harbor defenses, depots, and prisoner of war camps (for American guards and officers).

It was highly desirable, and a concerted effort was made, to place entire installations or portions thereof on an inactive status whenever the troop occupancy fell to a relatively low percent of utilization. A station only 50 percent occupied had operating costs which were 79 percent, not 50 percent, of the cost when fully occupied. From an operating point of view, the most economic conditions obtained when a minimum number of stations were occupied at full capacity and the remainder were placed on an inactive status. In some cases, however, it was necessary to keep installations in operation because of certain specialized activities that were carried on, such as combined maintenance shops, regional laundries, prisoner of war camps where prisoners were engaged in special work, and storage requirements. In these cases the major portions of the installation such as divisional areas were placed on an inactive status and held in readiness to be re-occupied on approximately 45 to 60 days' notice.

On 30 June 1945 Army Service Forces and Army Ground Forces enlisted men's housing at Class I, II, and IV installations was 68.8 percent utilized. In addition, 22 AGF and ASF posts were entirely

inactive, with a capacity of 301,000 persons, and 11 posts with a capacity of about 44,000 persons were surplus. Inactive areas had been set up at 29 posts.

Subsequent to the issuance of each Section 15 report, all posts, camps, and stations in an active status were carefully screened with the intent of placing as many as possible in an inactive status. This action was based largely on known redeployment needs and needs during demobilization after the defeat of Japan.

In order to retain the total number of AGF-ASF posts, camps, and stations on an active status to a minimum, a procedure was established whereby the Commanding General, Army Service Forces, made recommendations to the Chief of Staff (Attention: Assistant Chief of Staff, G-4) for a change in classification from active to inactive on those major installations for which no requirements developed for continued operation. From the list of stations placed on an inactive status, the War Department General Staff determined from time to time those installations which were no longer needed to meet War Department requirements and declared them surplus.

In September 1944, the War Department determined that a number of command installations were surplus to the needs of the War Department for the postwar military establishment. While many of these installations were currently active, the general policy was to discontinue activities at these stations so that they could be declared surplus and disposed of.

Disposition of Real Property

With the changing requirements of the war and with maximum utilization of existing properties, the number of inactive, excess, and surplus properties under the control of the War Department increased during the year. As of 30 June 1945, 39 properties had been placed in an inactive or standby status by the War Department—3 of these were Air installations, 9 were Army Ground Forces installations, and 27 were controlled by the ASF. These were held in readiness for future use during redeployment or in the postwar military establishment.

As of 30 June 1945, there were 3 installations in excess status which were no longer needed by a particular service but which had not been declared surplus to the War Department as a whole. By this same date, the Chief of Engineers had redistributed 75 properties involving 336,000 acres and improvements costing \$343,000,000. Another 224 posts had been transferred to other Government agencies. Some War Department lands were declared excess for the sole purpose of leasing them for productive use. For example, safety areas surrounding powder and TNT plants which had to be retained in order to protect the property were leased for farming operations. The Government not only received an annual cash rental of more than \$1,300,000 for such lands, but also added thereby to the production of foodstuffs. Industrial plants excess to the direct needs of the War Department were also leased to war contractors. Over \$4,700,000 was deposited in the Treasury as a result of management of War Department real property.

Surplus properties no longer needed for any purpose by the War Department were certified to the Surplus Property Board for disposal.

As of 30 June 1945, disposal agencies had not assumed custody of any of the 181 properties certified to the Surplus Property Board by the War Department. These included 79 air installations, 24 Army Ground Forces installations, and 78 installations of the Army Service Forces. The total cost of land and improvements on these properties amounted to 74 million dollars.

Repairs and Utilities

One index of the whole maintenance and operations task of the ASF was the square footage of the floor area maintained. In the fiscal year 1945, this was 1,456,600,000 square feet compared with 1,439,600,000 square feet in 1944. At the same time, the actual expenditures for maintaining and operating these facilities declined from 679 million dollars in 1944 to 500 million dollars in 1945.

A cost accounting system to measure repair and utility performance was installed at posts, camps, and stations in 1943. Its usefulness was amply demonstrated by the end of the fiscal year 1945. For example, from the cost accounting records of one general hospital it became apparent that maintenance and repair costs were running \$30,000 above the monthly average for comparable buildings at other general hospitals. Upon investigation, the service command engineer found that substantially more personnel had been recently employed than were required to do the job. The maintenance force was reduced by 55 people.

Other measures to determine maintenance efficiency were also employed. For example, one index to measure refrigeration and cold storage operations was the loss of freon refrigerant. Freon loss in itself was not expensive, but it indicated poor maintenance and possible spoilage of food. From the data collected on freon loss, the Chief of Engineers found one service command with a particularly high record. Special emphasis in this command was then placed upon a refrigeration maintenance program which during the year brought a 30 percent reduction in the use of freon. Freon conservation meant better operation and maintenance of refrigeration facilities.

Continuing inspection of all military posts was maintained by service commands and by the Chief of Engineers during the year. In this way, individual problems were reviewed and general maintenance standards carefully examined. Each post was assisted in making the best possible use of its maintenance force and funds.

Field inspections at posts during the last half of the fiscal year 1944 showed that great quantities of excess repairs and utilities supplies were being kept at many stations. This stimulated a stock control program for maintenance supplies which was begun on 30 June 1944. The value of the stock on hand at posts at that date came to \$67,700,000. By the end of April 1945, this had been reduced to \$47,700,000. Each service command established a control value for repairs and utilities supplies. The program for disposal of excess repairs and utilities property began on 1 October. By 30 April, more than \$12,000,000 worth of property had been disposed of. Another \$4,500,000 worth of property was redistributed within service commands. Over \$800,000 worth of property was transferred to service command warehouses and about the same amount

disposed of as salvage from posts, camps, and stations. The remaining 2 million dollars worth of property was still to be redistributed as of that date.

In order to improve the quality of drinking water and also to conserve water, special attention was given to improving plant operations. The total water consumption during the year was about 138 billion gallons, or three times the consumption of all Metropolitan Washington. If the Army used as much water per person as Washington, the figure would be twice as high. The number of water samples showing a nonportable bacteriological count was reduced by 45 percent during the year. Small quantities of chemicals were added to the water supply on some posts to control scale or corrosion

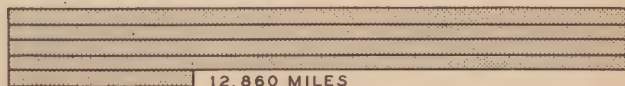
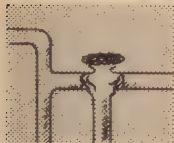
ASF OPERATION AND MAINTENANCE RESPONSIBILITIES

FOR UTILITIES AT POSTS, CAMPS AND STATIONS

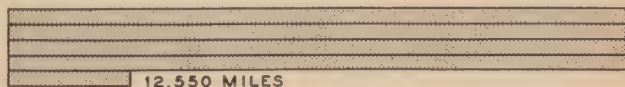
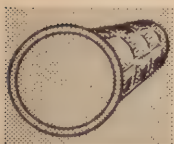
ELECTRIC LINES



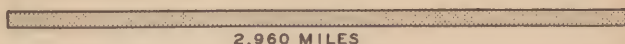
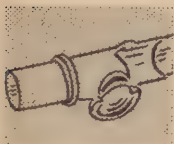
WATER MAINS



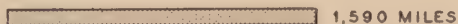
SEWER LINES



GAS LINES



STEAM LINES



in hot-water heaters and in piping. The rate of corrosion was inhibited from 70 to 90 percent by the application of protective coating to the interior of tanks and pipes.

The War Department was commended during the year by the U. S. Public Health Service for its operation of sewage treatment plants without complaints about pollution or nuisance. A detailed survey of all sewage treatment plant design and operation was made under the auspices of the National Research Council. The correlation of the design data and operating data was expected to result in improved and more economical design and operation.

Electric lines in use by the Army in the United States decreased slightly during the past year to 22,600 miles. This was sufficient to span the country nine times. Some 2.8 billion kilowatt hours were consumed, twice the annual consumption of Metropolitan Washington. Most electric energy was purchased rather than generated at Army installations. The cost per kilowatt hour declined from \$0.011 in 1944 to \$0.0106 in 1945. The decrease resulted from a reduction in maximum demands. The total maintenance and operating costs of the War Department's own electric systems was reduced 13 percent during the year. A program was begun to remove transformer capacity which was not being efficiently used from electric lines at Army installations. This program was 32 percent complete by 30 June 1945. The eventual annual energy savings were expected to amount to \$100,000. These transformers had a value of \$800,000.

In conjunction with The Quartermaster General, the Chief of Engineers in July 1944, established a fuel-conservation program to restrict the use of fuel at posts and to achieve higher operating efficiency in heating equipment. At certain gas-fired posts all heating operations were cut off after 10 p. m. and also during the day when troops were out of barracks. This brought about reductions from 25 to 40 percent in fuel consumption at these posts. The Bureau of Mines cooperated in determining an inexpensive method of reducing corrosion in steam distribution systems. At many installations the elimination of corrosion in the return line system was expected to double its life. A simplified means of heating water to a high temperature was found for sterilizing dishes at hospitals. Consolidation of central boiler plants and improvement in manpower utilization brought about an increase in plant efficiency and reduced operating costs at general hospitals, regional hospitals, and warehouse buildings served by central steam plants, approximately 15 percent savings in fuel resulted after installation of thermostatic control equipment. By 30 June 1945, some 600 installations had been completed with a savings of approximately \$600,000, amortizing the cost of the control equipment in 2 years.

Concerted efforts were made during the year to improve Army refuse collection and disposal practices. Posts were provided with efficient incinerators or with a sanitary fill system for disposing of refuse. Substantial improvements as well as cost reductions were also made in mosquito control, rodent control, and in the control of other pests.

The acreage of grounds maintained at military installations in the United States was approximately 14,454,000 acres on 30 June 1945,

of which 1,133,000 acres were improved grounds. The cost of maintaining improved grounds was reduced about \$1.40 per acre in 1945. This resulted from improvements in equipment, savings in labor and materials, and more efficient management at posts. An increased maintenance program including landscape development was begun in areas adjacent to general and convalescent hospitals. Some 7,000 tons of fertilizer were obtained as a byproduct from ordnance plants. A number of studies were begun to determine means for reducing dust, particularly at airfields.

The great increase in the number of patients returning to the United States and mounting public interest in the operation of Army hospitals led to an increase in the maintenance standards for general and convalescent hospitals. This program included floor coverings, wall lining, exterior and interior painting, inclosing of connecting walkways and corridors, improved plumbing fixtures, and the establishment of lawns with additional shade trees and shrubbery. The methods and materials for accomplishment of this program were developed and instructions to the field distributed early in the year. Work was begun in December 1944 and January 1945. The entire program was virtually completed by 30 June; 65 general hospitals were involved with a total expenditure of approximately \$5,000,000. The technical data for this program were also given the Army Air Forces for use in a similar program at AAF convalescent hospitals.

Wartime standards of maintenance have resulted in postponement of many essential projects and a general lowering of all maintenance work. Approximately 75 percent of the Army's structures were of a temporary type. Work in many cases for the permanent buildings was deferred. At the end of the year it was evident that remedial measures were required before too much valuable property suffered irreparably. The War Department approved increased maintenance at posts which would probably be retained for use after the war. To this end a program of deferred maintenance was developed, including painting, reroofing, interior insulation, improved flooring, and improvement of utility plants. Specifications and instructions were issued to the field installations of the Army Service Forces and to the Headquarters of the Army Air Forces.

The roadways maintained by the Army were sufficient to span the United States 25 times. A major road maintenance problem was that of supporting concrete slabs where subgrade had been displaced. A program of bituminous subceiling was initiated which prevented the failure of concrete slabs and a subsequent savings in replacement costs. Within one service command alone this program saved 50 percent of the pavement which otherwise would have had to be replaced within 2 to 3 years. Some 4,200 miles of railroad were maintained in Government-owned installations. All renegotiation assignments of utility contracts except three were completed during the year. About 1,000 contracts for 1942 and 1943 were renegotiated, resulting in recoveries of 2 million dollars on 1942 and 1943 business and savings of over \$300,000 on 1944 business.

Automatic sprinklers were provided for the safeguarding of patients in hospitals during the year. The program was also extended to the fire protection of critical supplies in depots. The program was 62 percent complete by the end of the year.

Fire protection measures were generally successful in reducing losses to a minimum, below comparable civilian experience.

National Cemeteries

There were 80 national cemeteries on 30 June 1945. Seven of these had been considerably enlarged during the year. In connection with pending legislation, studies were made for the establishment of 79 additional cemeteries within the United States and 3 in the territories. Preliminary drawings were prepared for 4 of the proposed cemeteries. There were 7,989 interments in national cemeteries in the fiscal year, bringing the total interments to 489,101.

On 1 June 1945, a revised plan was submitted to the War Department for returning American dead from overseas and for the establishment of oversea cemeteries. Plans were completed for furnishing grave location cards for all burials outside the United States. By June 1945, there were 325 temporary cemeteries overseas. There were also more than 1,000 civilian cemeteries in which Americans had been buried by Germans and 7 cemeteries in neutral countries where American soldiers had been interned and later died. There were some 132,380 Americans buried overseas, of whom 3,000 remained to be identified.

A systematic plan on grave registration was put into effect in the United States and overseas in February 1945. Each service command and oversea theater were instructed to organize a Grave Registration Service under the supervision of The Quartermaster General.

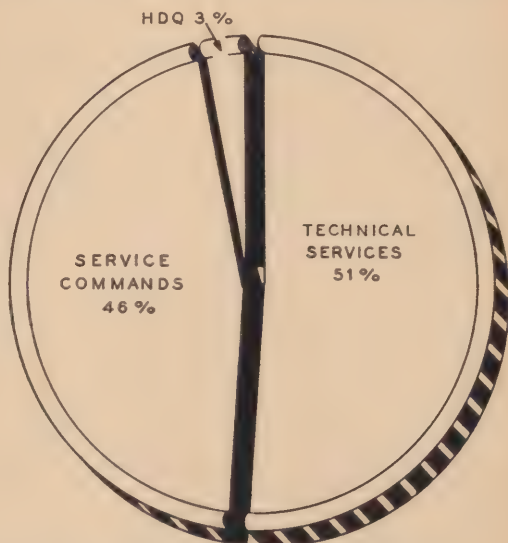
Chapter 18. MANAGEMENT

The wide variety of tasks performed by the Army Service Forces is readily apparent from this report. This work was spread throughout the United States, while supplies, messages, and services went around the world. There were 1,200,000 persons in the United States engaged in the activities of the ASF on 30 June 1945, of whom 500,000 were military personnel and 700,000 civilians. This was a large enterprise, by any standard of measure.

So vast and complicated an effort required the highest possible utilization of managerial abilities and techniques. In its simplest

ASF OPERATING PERSONNEL

JUNE 1945



terms, management in the ASF meant three things: the desired results produced; when required; with the least possible outlay of manpower and materials. The achievement of these objectives required constant, specialized attention. In the ASF, all echelons, or levels, were management conscious. No great enterprise could be administered solely from a central point. The Army Service Forces depended for its record of performance upon the initiative and devotion of all its managers and supervisors every place.

The first great operating agencies of the ASF were seven technical services and nine service commands, plus the Military District of Washington. Below the chiefs of technical services were heads of procurement districts, arsenals, plants, depots, ports of embarkation, division engineers, zone transportation officers, laboratories and prov-

ing grounds, schools, and others. Below commanding generals of service commands were the commanding officers of posts, general hospitals, rehabilitation centers, disciplinary barracks, maintenance shops, finance offices, redistribution stations, and others. Staff officers of the ASF, of technical services, and of service commands often had large units which they were directly supervising. Throughout all of these commands there were thousands of individuals every day concerned about the management of their part of the whole enterprise.

The management program of the ASF had many aspects—personnel, organization, budget, procedures, work simplification, intelligence, planning, work measurement. These were special techniques intended to achieve the broad objectives of management policy. Management, as an effort to achieve results efficiently and on time, however, could not be divorced from each field of ASF activity. Whether the job was procurement, storage, medical service, shiploading, induction of soldiers, separation, operation of post exchanges, repair of buildings, repair of automotive equipment, the publication of orders and instructions, the making of motion pictures, or the publication of Army newspapers—in each job an effort was made to perform the task in the most effective way possible with the least expenditure of manpower and materials.

Throughout this report some account has been given of the more outstanding results achieved from this constant concern with good management. In this chapter some of the special problems of management, and the use of particular techniques, are mentioned in order to illustrate the concerted attention given to this subject.

Trends in the volume of business and operating personnel in the ASF.

The ASF volume of business increased more during the fiscal year 1945 than in the fiscal year 1944. A composite index of ASF activities, covering about 90 percent of the operating personnel in 21 major fields, rose 66 points, in comparison with a 57-point increase during the fiscal year 1944.

Although the volume of actual work performed increased during the year, the index of operating personnel remained about the same. There was a decline of 32 points in the personnel index in the previous year.

There were increases during the fiscal year 1945 in such activities as manufacturing at Quartermaster depots and Chemical Warfare and Ordnance arsenals; tonnage handled in and out of depots; in-bound and out-bound cargo at ports of embarkation; the embarkation and debarkation of troops and their processing at staging areas; fourth and fifth echelon maintenance; patients in the general hospital system; prisoners of war interned in the United States; and personnel processing such as induction, reception of oversea returnees, processing oversea returnees at redistribution stations, and separation. Declining activities included the supply and service of troops at posts in the United States and fewer ASF troops to train.

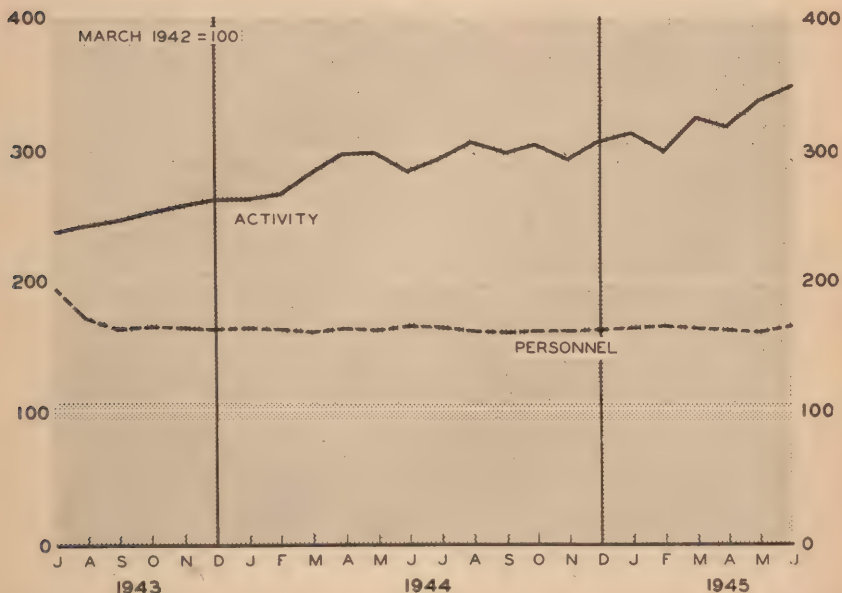
At the close of the fiscal year, there were 1,232,000 military and civilian operating personnel in the Army Service Forces, a net decrease of about 9,000 from the strength on 30 June 1944. During the year, however, there was a net decrease of 53,000 civilian personnel as

against a net increase of 44,000 military personnel. In general, increased military staffing resulted from increasing redeployment work loads, particularly at personnel centers, training centers, and in station complement activities. Reductions resulted from cut-backs at arsenals and in procurement.

Military personnel

The military personnel problems of the ASF in the fiscal year 1945 were again those of having enough to do the job while making men available for oversea duty and while seeking civilians for every possible job. There were certain types of work where the ASF had to rely largely upon military personnel, as at personnel centers, disciplinary barracks and prisoner of war camps; then there were certain

ASF ACTIVITY AND PERSONNEL INDEX



necessary military locations with only a limited number of civilians in the surrounding area who might be hired. Contract settlement and property disposal work brought an increase of 4,346 military personnel in technical services when civilian accountants and other specialists could not be obtained. Convalescent hospitals required 9,350 military personnel; the reconditioning program, 2,250 persons; hospital trains, 4,800; reception stations, 10,200; separation centers, 9,700; redistribution stations, 7,050; disciplinary barracks, 5,200; general hospitals, 16,500; prisoner of war camps, 18,000; and maintenance shops, 1,000. On the other hand, some 1,500 military personnel was cut from depot operations during the year, 10,000 were cut from training centers and schools, some 35,000 from station complements, and 19,000 from station and regional hospitals.

A part of the need for increased military personnel in the operating jobs of the ASF was met by the Women's Army Corps. WAC

strength increased from 29,500 to 33,400 officers and enlisted women during the year. These were included in the total figures of ASF military strength. The needs for additional military personnel were reduced by the use of some 27,000 members of Italian Service Units and 138,000 prisoners of war on operating activities.

A continuing effort was made to fill all operating positions to the maximum extent possible with civilians, WAC enlisted personnel, enlisted men physically disqualified for oversea duty, and returnees from overseas. At the same time, it was necessary for the Army Service Forces to meet War Department unit and oversea replacement requirements. Since the flow of personnel to the ASF from reception centers during the year was 28,691 short of War Department allocations, the major source of personnel for units was physically qualified personnel released from operating jobs. The utilization of this personnel enabled Army Service Forces to meet its large loss and rotational replacement and unit personnel requirements from overseas. The number of enlisted men in the Army Service Forces overhead available for oversea assignment was reduced from 51,523 on 30 June 1944 to 3,971 on 31 May 1945.

From the time of the announcement of the War Department policy on release of personnel for oversea assignment on 24 January 1944, the Army Service Forces had released, by the end of the fiscal year 1945, a total of 236,675 physically qualified enlisted men from overhead operating jobs. Nonexempt physically qualified personnel were almost completely relieved from overhead positions and considerable progress was made in replacing temporarily exempt personnel who under the War Department policy were required to be assigned as rapidly as replacements could be made available.

On 31 May 1945, of the total ASF operating strength, 72 percent consisted of enlisted men permanently physically disqualified and of WAC, compared to 51 percent in these same categories on 30 June 1944. Oversea returnees made up 5 percent of the total operating strength of the ASF as of 30 June 1944, and 30 percent by June 1945. Considerable progress was made in replacing temporarily exempted key specialists. On 30 June 1945, about 8 percent of the total operating strength consisted of key specialists, compared with 9.7 percent on 30 September 1944.

The immediate personnel problems remaining on 30 June was to replace the 24,770 physically qualified enlisted men still temporarily exempted as key specialists with qualified permanently exempted personnel, and to replace those oversea returnees in overhead who were eligible for discharge. This latter problem was particularly troublesome because of the extent to which men returned from overseas had been absorbed in ASF operating jobs.

Increased emphasis upon the release of officers was given by the publication of an ASF directive issued on 27 April 1945, ASF Circular 151. This established the policy that all bulk operating positions in the Army Service Forces currently filled by officers and warrant officers qualified for oversea service would be filled to the maximum extent possible by officers who had oversea service, by those who were not physically qualified for shipment overseas, and where practicable by WAC officers. In May, 886 officers and in June, 1,114 officers were accordingly released.

The separation of ASF military personnel after VE-day could proceed only slowly. Adjusted service rating forms were prepared throughout the ASF immediately after R-day, 12 May 1945. In order to let enlisted men with a rating above the initial critical score of 85 go, technical services, service commands, and staff directors had to have suitable replacements. Men with low adjusted service ratings were not being returned from overseas and could not be expected in any numbers until the end of the first quarter of the fiscal year 1946. Since returnees were virtually the only source of replacements, there was little which could be done to let enlisted men go in the absence of suitable replacements. As soon as civilian workers were available in larger numbers, adjustments could be made which would let ASF enlisted personnel go who had an adjusted service rating of 85 or more. Only one officer was separated from the ASF under demobilization procedures in the month of June 1945.

Continuing efforts were made to study a reduction of overhead personnel requirements. Thus, for example, the Director of Military Training investigated the ratio between overhead personnel and trainees in ASF schools. This study revealed that as of 30 June 1944 there was one overhead personnel for every two trainees. This seemed obviously an extravagant situation, yet overhead personnel had more than just training duties. It had important personnel and administrative responsibilities as well. In addition, a decline in trainee strength could not always be paralleled by a corresponding decrease in overhead. Capacity could be expanded considerably without any very large increase in overhead. Nevertheless, it was this type of situation that the ASF was continually trying to rectify. In part, it was accomplished by consolidation of training installations. This had the result by the end of the year of reducing the ratio between overhead and trainee strength from 1 to 2 to 1 to 4.

Civilian personnel.

The Army Service Forces continued to refine its methods and procedures for the employment of civilian personnel during 1945.

One difficulty in civilian personnel administration at field installations was the lack of an adequate program for the evaluation and placement of employees. Placement principles had not been followed because of the pressure of getting activities under way quickly in the earlier days of the war. Nor had the means been adequate for instructing local personnel officers in the details of proper placement and evaluation. Special courses were presented for training groups of ASF placement personnel in Headquarters, service commands, and technical services. Arrangements were made with the AGO to continue these placement training programs. A manual also was issued containing complete instructions for placement performance in Army Service Forces installations. The program then began to move so satisfactorily that special consideration was given to replacement problems peculiar to individual ASF components. The special training program begun in 1944 was extended to cover more field installations during 1945. There was definite indication that this program was meeting a real need through greater production from workers and less absenteeism and turn-over. More complete information was provided personnel officers and their superiors about job requirements

and employee performance. More accurate evaluation of employees produced efficiency ratings and other personnel actions supported by the best obtainable factual data. One value of the program was the reassignment of employees where their skills could be best utilized; other benefits included the identification of specific training needs and appropriate wage classification of all workers. An efficiency rating procedure was established for all ASF ungraded employees to meet the Civil Service Commission's regulations governing reduction in force. Under this procedure a rating was prepared for each ungraded employee at the end of each 6 months' period, and these ratings were cited later when personnel cuts required official employee evaluations.

Civilian personnel officers and employee counsellors were encouraged during the year to advise only on employee relations; supervisors were made clearly responsible for satisfactory relations. In order to aid the supervisor, a "corrective interview" was developed which would assist him in discussing problems of performance, attitude, or relationship with any employee. Most employee complaints entering the ASF grievance procedures channels were satisfactorily settled at the installation level; only 50 some cases reached Headquarters, ASF, for review. In order to correct certain deficiencies discovered through these reports, an informal bulletin was prepared on the application of the grievance procedure at the field installations. This bulletin emphasized the necessity for handling a grievance through the supervisory line of authority and explained the proper assembling and referrals of all grievance records.

Employee services were further developed during the year, resulting in improved medical facilities, housing, and transportation for civilian employees, the provision of funds to be used as a source of emergency loans, additional sanitary facilities, and an increase in the publication of station periodicals.

In July 1944, some 74,000 ASF civilian employees completed in-service training. By November over 100,000 had completed training, and from January to June 1945, an average of 115,000 persons completed training each month. In March, there were 164,000 employees who completed training courses. A training program was developed for more than 700 maintenance supervisors, who in turn were expected to instruct thousands of employees. This program was operated in all of the clothing and equipage shops of the nine service commands.

Job methods training, job relations training, and instructor training were continued during the year, with greater emphasis upon the quality of personnel trained and upon inspection of results. During the year, over 78,000 supervisors received basic supervisory training. In Washington, the need for clerk-typists and stenographers could be met only by an extensive preassignment training program. By March 1945, 10 or 11 classes of 2 weeks each were in operation. The average typing speed of typists increased from 31 to 46 words per minute, while stenographers lifted the average words taken per minute from 60 to 90. Over 2,400 typists and nearly 1,000 stenographers were trained from September 1944 through June 1945.

During the year a coding structure was set up which enabled the Army Service Forces to report on a uniform basis the training received by its employees. This plan gave each employee his training record, which would be useful to the War Department and the U. S. Em-

ployment Service in the further placement of workers in jobs utilizing their acquired abilities.

Beginning in December, 1944, a definite program for general use of testing civilian employees was advocated throughout the ASF. The Industrial Personnel Division offered its assistance to staff divisions, technical services, and service commands in inaugurating such programs on a pilot basis. After these pilot programs, comprehensive coverage was planned to meet the particular testing needs of a service or command. These testing programs proved valuable instruments in placement and training, and secondarily, as media in employee relations. Test results were used by placement officials to determine optimal initial assignment of new employees and to locate unused abilities and aptitudes affecting in-service placement and promotion. Test results were also used by training officials in selecting employees who had ability to benefit from training and in evaluating the results of training. Test results were studied by employee counsellors in cases where the cause of grievance or maladjustment on the job might arise from a lack of fitness on the part of the employee to perform the duties assigned.

The program for fixing standard wages for ungraded jobs in the Army Service Forces was improved during the year. Numerous locality surveys of labor market areas were made and many revised rate schedules were issued to ASF installations. Several manuals were published explaining the program, additional rating standards were distributed to the field, and many of the older standards were revised. There were 1,403 initial schedules developed or revised during the year for Government-owned, Government-operated plants and installations. In addition, 2,296 rulings for Government-owned, privately-operated facilities were issued. The initial determination of wage schedules in post exchanges, begun in 1944, was virtually completed. Problems peculiar to exchange operation and involving such factors as overtime arrangements, commission payments, annual rates for top exchange executives, and bonus plans were studied and procedures and policies were established for their solution.

A new technique was introduced in 1945 for surveying civilian personnel offices, and this technique became the basis of a program for improving civilian personnel operations throughout the ASF. The technique was demonstrated to technical services and service commands to enable them in turn to evaluate civilian personnel programs at their installations, and to introduce improved procedures. A number of special appraisalment surveys of operations were made in civilian personnel offices. Twenty-nine general inspections of civilian personnel programs were completed, of which 9 were at field installations under technical services and 11 at field installations under service commands. Findings were reported to commanding officers and higher echelons with recommendations for improvements in certain areas. Special field surveys were made by audit teams to inspect wage administration and classification, including investigation of job content for establishing wage standards or use of post-audit of job performance to confirm or correct grades. Teams of specialists inspected training programs, and participated in instructing members of local civilian personnel staffs about training principles, wage administration, and classification methods.

The method of authorizing, reporting, and controlling civilian personnel was revised to bring ASF practice into line with the War Department system of personnel control. Intermittent employees, force account and other purchase-hire employees, maritime workers, students, and trainees previously not subject to authorization were included. The civilian personnel control form was revised and simplified. The allocation of prisoners of war other than Italian Service Units was established for essential military work of the ASF. Forms and operations were developed for reporting budget estimates for personnel services on a functional basis. Procedures were developed for centralized recruitment of personnel for the departmental service. A service was established for the purpose of retaining desirable employees who intended to separate themselves from ASF departmental service.

An employee record card was developed to serve as a consolidated personnel data sheet making available in one simple form all of the permanent information needed by administrative personnel. This card was used by many ASF installations and gave information on placement, ceiling control, reduction-in-force, and turn-over record.

A study of the operations of the Army Service Forces Central Civilian Retirement Records Office was made in September 1944, because of a serious situation which existed in the number of unprocessed applications for refunds. Changes were inaugurated which reduced the backlog of refund applications from 202,000 to 27,000.

Planned instruction in civilian personnel administration was continued at the civilian personnel officers' school, and during the year 12 regular courses were held, graduating 550 students. A special course was given 52 women civilian personnel officers. The civilian personnel officers trained in these classes supervised approximately 400,000 civilian employees in the ASF. To improve training practices, five separate classes for specialists in training were held at the school and 182 students were graduated. As an over-all guide to the civilian personnel officer at the field level, a "Civilian Personnel Officer's Handbook" was issued in April 1945. Supplementing this manual, additional manuals were distributed on special aspects of the civilian personnel program.

Work Simplification

During the fiscal year the work simplification program, started in December 1942, continued at an increasing rate. The progress achieved reflected additional training, active supervision, and the impetus brought about by increasing evidence of the value of the program. Personnel saved as indicated by reports on results from 15 March 1943 to the end of the fiscal year 1944 were 133,355 out of 739,551 persons surveyed, or 18 percent. During the fiscal year 1945, some 94,463 persons were saved out of 475,363 surveyed, or 20 percent. Savings reported during the current fiscal year represented 8 percent of the total operating strength on 30 June 1945.

To show field officers the possibilities of work simplification, a sound motion picture was prepared in July 1944, and placed in all service command libraries. During the first 2 months, the film was shown to over 600 audiences. Also, over 50,000 work simplification manuals have been distributed since the initiation of the program.

The Mediterranean Theater, the Southwest Pacific Theater, and

the Bureau of the Budget requested the assistance of officers of the Army Service Forces in establishing adequate work simplification programs.

On 14 October 1944, an ASF Circular was published to bring together the work simplification program and the job methods training program. Later in the year the analysis technique, taught through job methods training, was added to the original seven techniques of the work simplification program.

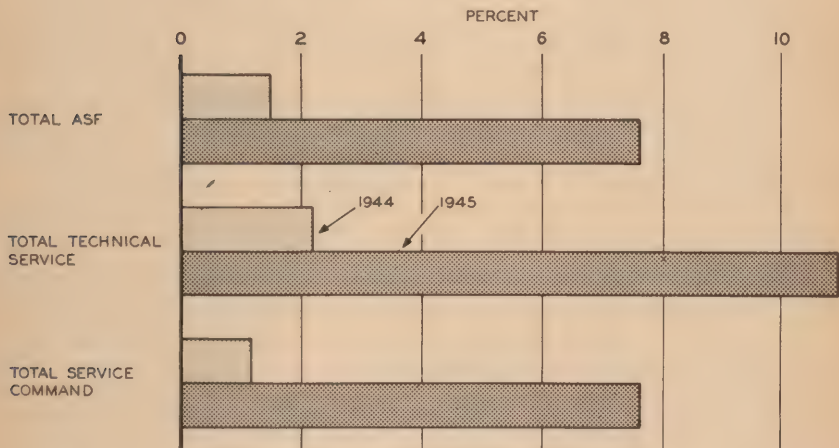
Work Measurement

A proper balance between personnel assigned to jobs and the existing work load has been emphasized since the inception of the Army Service Forces. The reports and controls to accomplish this ob-

WORK SIMPLIFICATION RESULTS

PERCENT OF OPERATING PERSONNEL SAVED

FISCAL YEARS 1944 AND 1945



jective have been continually improved. Steps were taken in July 1944, to standardize this process through a work measurement program. The program was designed to extend and strengthen the control of personnel through the development of standards for all measurable operations and activities of the Army Service Forces.

A manual prescribing the standard procedures and policies of work measurement was published in July 1944; about 20,000 copies were distributed. This manual prescribed in detail the forms, procedures, and system to be followed by all organizational elements of the Army Service Forces in establishing standards to measure work performance in terms of personnel employed on comparable activities. The manual was divided into two parts covering "continual work measurement" and "spot check work measurement," with emphasis upon the former. There was continual measurement and reporting for those types of installations for which uniform measurement plans were prescribed. This manual was revised on 15 January 1945, incorporating improved forms and reporting procedures.

Briefly, the work measurement program encompassed the establishment of uniform and carefully defined definitions of the major functional activities of each different type of ASF installation. Larger activities were broken down into operations. Work units were selected to measure best the work load of the operation or activity at all times, and the average personnel required for each installation to perform one of these work units was recorded over a 30-day period or more. A standard number of man-hours per work unit was then established by selecting that number which lay half-way between the best and the middle performance of all installations affected. A monthly report was required of each installation.

The first uniform plan for continual work measurement was installed in depots on 1 December 1944. The following month saw the installation of the plan at Adjutant General depots, posts, the Army War Bond Office, the Office of Special Settlement Accounts, and the Army Regional Accounting Office. In the remainder of the fiscal year, uniform plans were prescribed for Chemical Warfare Service and Ordnance arsenals; finance offices; regional, general and station hospitals; procurement offices; ports of embarkation; staging areas; holding and reconsignment points; service schools; the Office of The Adjutant General; and the Office of Dependency Benefits. Plans were being developed at the end of the year for training centers and maintenance shops. On 30 June 1945, uniform work measurement plans had been prescribed for 611 installations, and the work of 588,000 persons was being measured through standards developed for 774 activities and operations.

Many conferences were held by technical services and service commands to indoctrinate their field personnel in the application and use of work measurement plans for their installations. The Work Measurement Manual, ASF Circulars, and these conferences constantly extended the scope of work measurement and produced a high degree of uniformity in all programs.

Work measurement data were published monthly and distributed to all staff divisions, chiefs of technical services, and service commanders. This report summarized the performance of technical services and service commands in total and by installation. It also reflected, by measured activities and operations, the total ASF work units and man-hours expended, and the relative performance of each technical service and service command on each of these functions. The report also included a summary of standards established by technical services, service commands and those set by Headquarters, ASF, to be used by all commands. The report presented each month the "total coverage," that is, the percentage of total operating personnel measured for each technical service and service command and the total percentage of people covered by standard plans. Operations, activities, and installations having low effectiveness ratings were investigated for the purpose of removing any excess personnel, improving the work methods through work simplification, providing further training of employees in their tasks, improving the organization or utilization of equipment, and estimating future personnel requirements.

Effective with the month of June 1945, depots and posts started utilizing certain "ASF" standards. Such standards were generally

developed through averaging the standards established by the various technical services and service commands where these standards approached a satisfactory degree of uniformity. This uniformity tended to increase through comparison of standards between commands. Most of the standards originally established were successively reduced through improved operations and better utilization of personnel resulting from work measurement data.

A variety of conditions were discovered and corrected through work measurement, and the data thus obtained were used daily by all echelons to improve ASF personnel utilization. For example, a large post found that work measurement data indicated a need for shifting personnel between functions. Those with low effectiveness could transfer people to activities which had built up backlogs and needed additional personnel. A signal activity at a large installation was rendering service below requirements and additional personnel was requested. An analysis of the work measurement data sheets showed that time away from the job—sick leave, annual leave, or excused absence—was excessive. Corrective measures were applied and the increase in personnel was not necessary.

The setting of standards for certain personnel activities at some installations showed commanding officers that total personnel was excessive. Because personnel officers had been able to justify the total personnel in previous surveys, no action had been taken to reduce personnel. The application of work measurement standards gave post commanders comparative figures with other installations and enabled them to make appropriate reductions in personnel. One technical service requested comment from one of its depots as to why the "rail operation" was showing such a low effectiveness. The reply revealed that some depots in the service had their storage personnel seal the freight car doors after loading the car, eliminating the need for the transportation division to send personnel to seal cars. Steps were then taken to extend the practice of having loading personnel perform all sealing of cars.

Service Control

In May 1945, the Army Service Forces began yet an additional program to improve its work performance. Work measurement was essentially a personnel tool. Its purpose was to indicate relative efficiency in using personnel for various jobs in the ASF, so that field offices with a high proportion of personnel engaged in particular activities could be identified and steps taken to improve personnel utilization. Such steps were necessary in order to shift personnel as work loads declined and in insuring the best use of available personnel. On the other hand, work measurement did not directly establish goals for satisfactory work output.

The job of the ASF was service to the Army. The question then was what constituted satisfactory service. In an effort to answer this problem, the ASF established what was called "service control." This program was intended to establish goals by which any installation could tell whether it was performing its work in a prompt, efficient manner. The device was to set up "targets," representing best performance, and "minimum service," which was the least output level at which an activity could be called satisfactory. In June 1945, an ASF

Circular was published which established targets and minimum service objectives for 167 different ASF activities.

For example, the target for payment of newly arrived patients at Army hospitals was 3 days, and the minimum service standard was 4 days. The target in loading ships in American ports was 2,000 measurement tons loaded per ship per day. The target for repairing heavy duty wheeled vehicles was 3 days and the minimum service standard was 14 days. The target for separating an enlisted man from the Army was 24 hours and the minimum service standard was 48 hours. Thus, in various fields, a target was established, and where possible a minimum performance figure set up. Each operating unit could compare its output or record against these "service controls." If performance was less than these standards, then something was wrong and corrective action was needed.

From time to time, all target and minimum service objectives were to be reviewed and revised where appropriate. As rapidly as possible, service control was to be extended to every type of ASF activity where feasible.

Service control meant time limits on performance of work. It was another step in the constant effort of the ASF to improve operations.

Budget

The net obligations for Army Service Forces activities in the fiscal year 1945, were 34.9 billion dollars, compared with 25.8 billion dollars in 1944. Original estimates for 1945 were based on the assumption that the strength of the Army would be maintained at the then authorized figure of 7,700,000. By the beginning of the fiscal year, however, the actual strength exceeded 8 million and the average strength for the year was about 8,036,000 or about 5 percent above the estimate.

When 1945 estimates were prepared, General Eisenhower's armies had not landed in Europe nor had General MacArthur's forces invaded the Philippines. While these plans were anticipated, the estimates for supplies and equipment were based upon limited battle experience tempered by judgment on ammunition expenditures, replacement factors, and other elements in the computation of requirements. As actions about the world developed in full employment of our troops against the enemy, it became apparent that earlier computations of requirements were inadequate. Production schedules were below issue demands for many items and reserve stocks were rapidly depleted; other issues fell below expectations. The problem of meeting supply demands was in turn reflected in increased obligations and expenditures of appropriated funds.

The budget estimate for fiscal year 1946 was 29.7 billion dollars net, or 5.2 billion dollars less than the 1945 program. The amount of the decrease did not fully reflect the difference between a two-front war and a one-front war, since VE-day occurred prior to the close of fiscal year 1945; hence, it was possible to anticipate the cessation of hostilities in Europe. If VE-day had not occurred until the end of June, and if it had been impossible to curtail the procurement program in advance of VE-day, the 1945 obligations would have been several billion dollars higher and the difference between the 1945 and the 1946 programs would have been much more striking.

While it was estimated that net obligations would decrease about 15.4 percent, it was believed that expenditures for the fiscal year 1946 would be only slightly less than those for fiscal year 1945, which totaled 37 billion dollars. Expenditures increased during the last several months of the year, and it appeared that they would probably remain at those levels during the first part of the fiscal year 1946.

The higher obligations incurred during 1945 meant high expenditures for several months to come, despite the large volume of contract terminations. Reductions in expenditures as a result of termination would be offset in part by termination costs and by payment for items already delivered but not yet billed.

Army Service Forces estimates for fiscal year 1946 compared with previous years' net obligations

Service . . .	Net obligations		
	1944	1945	1946 estimated
Total	25, 882, 984, 942	34, 880, 300, 000	29, 752, 800, 000
Finance service	10, 886, 797, 101	13, 335, 600, 000	13, 772, 500, 000
Ordnance service and supplies	2, 505, 273, 747	7, 874, 900, 000	3, 418, 400, 000
Signal service	1, 291, 573, 998	1, 663, 600, 000	701, 300, 000
Quartermaster service	4, 445, 192, 623	6, 130, 400, 000	5, 711, 800, 000
Transportation service	2, 241, 593, 228	2, 060, 400, 000	1, 785, 000, 000
Engineer service	3, 617, 603, 000	2, 710, 800, 000	3, 228, 100, 000
Medical and Hospital Department	264, 108, 285	359, 500, 000	395, 200, 000
Chemical Warfare service	619, 859, 906	729, 300, 000	721, 700, 000
Miscellaneous	10, 983, 054	15, 800, 000	18, 800, 000

Transportation, travel, port operations, maintenance, repairs and utilities and many other operating expenses were expected to increase sharply during the period of redeployment. Even the reduction in the size of the Army would mean a temporary increase in expenditure because of mustering-out pay.

The lag between obligations and expenditures averaged about 6 months. There was a continuing review of obligations; close follow-up to see that payment of bills was made promptly, a tightening on procurement contracts with a view toward cancelation of inactive contracts, a revision of unliquidated obligations in the light of program cutbacks and reduced prices, and a rock-bottom budget approach placing emphasis upon the subject of unit costs.

A cut-off was made at the close of the fiscal year 1944 and funds previously allocated were not available for 1945 obligations. This made possible a segregation of prior years' obligations from current year program commitments and permitted a constant review of progress in liquidating previous years' obligations.

One of the most important developments during the course of the year was the change in the method of allocating funds in the Army Service Forces. At the close of the fiscal year 1944, the Secretary of War established an Ad Hoc Committee to survey and make recommendations on the fiscal and budgetary operations of the War Department. During the fiscal year 1944 funds were allocated directly to technical services by the budget officer of the War Department. This procedure caused difficulties in checking budget performance against ASF programs. It was recommended by the committee that

appropriated funds for the agencies within the Army Service Forces be allocated by the budget officer for the War Department to the Commanding General, Army Service Forces, in keeping with the principle of command. This practice was put into effect at the beginning of the second quarter of the 1945 fiscal year, and a firm centralized control on the suballocation of funds to operating agencies was established. Fund requirements for the services were then summarized, related to the ASF program, and defended by the Fiscal Director. Suballocations were made to the services and service commands by the Office of the Fiscal Director. This action permitted a closer supervision over the use of funds, and required the justification of needed funds to higher authority upon a general program basis.

Another important development in 1945 was the enlargement of the responsibility of fiscal officers. This was also recommended by the Ad Hoc Committee, and resulted in putting fiscal examination ahead of procurement. Taken in the interest of economy, the practice was in keeping with the greater emphasis on the control of appropriated funds, and insured that at each echelon of command all proposed outlays were scrutinized for adequate justification as a first step in procurement.

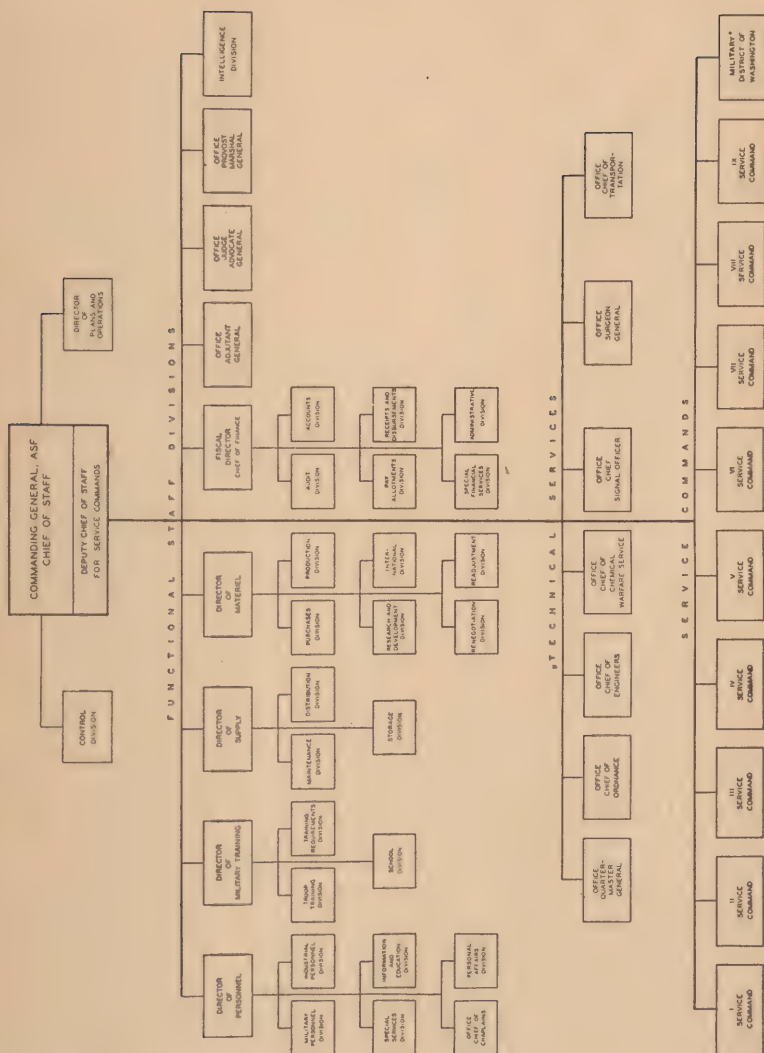
In order to improve budget procedures, a "report of budget performance" showing program changes and their relationship to funding was made a mandatory requirement for technical services and using agencies when filing requests for funds.

In preparing Army Service Forces budgets estimates for the 1946 fiscal year a new procedure was initiated by the ASF for the development and presentation of civilian personnel costs. This procedure enabled estimating agencies to forecast fund requirements more accurately and reduced man-hours required for computation to an absolute minimum. The procedure was applied Army-wide at the direction of the Secretary of War. In brief, the procedure permitted the forecasting of fund obligations for civilian field personnel upon the same activity basis used in reporting and controlling personnel strengths. Thus, personnel program data were used in support of the estimates and a direct relationship was established between authorized personnel strengths and amounts requested.

Organization

There were a few adjustments in the organizational structure of the Army Service Forces during 1945, but there was no shift in the basic pattern of staff divisions, technical services, and service commands. The latter two were the basic operating units of the ASF, although staff divisions also managed certain basic centralized services for the War Department and the Army Service Forces as a whole. The responsibilities of each were prescribed in the ASF Organization Manual, which was periodically revised as changes in responsibilities occurred.

The most important organizational change of the year occurred in the relationship of the ASF to the Army Air Forces. Prior to September 1944, the ASF, through its service commands, had supervised a number of activities at Class III installations—Army airfields and other AAF installations. These activities included supervision of post exchanges, fixed signal communications, sanitation and hospital



LEADER ABILITY SERVICE FOR ADMINISTRATIVE AND SUPPORT FUNCTIONS

activities, ordnance maintenance, athletics and recreation, library activities, information and education, disbursing activities, operation of laundries, and repairs and utilities operations except at aircraft assembly plants and AAF depots. C 13, AR 170-10, 1944, provided that service commands would no longer supervise fixed signal communications, ordnance maintenance, information and education work, repairs and utilities, and salvage activities at any air installations in the United States. Funds and personnel authorizations for these activities were made directly to the Commanding General, AAF. The new relationship between the two commands was amplified in War Department Circular 388, 1944. The chiefs of technical services continued to set up Army-wide standards for the performance of various services, and from time to time inspections were made of AAF installations to insure that these standards were being met. All continuing supervisory responsibility in the fields just mentioned, however, remained with the Army Air Forces and not the Army Service Forces.

By War Department General Orders 39, 1945, the National Guard Bureau and the Executive for Reserve and R. O. T. C. Affairs were transferred from the staff of the Commanding General, ASF, to the Special Staff reporting to the Chief of Staff of the Army.

One staff division was abolished in June 1945, the Officer Procurement Service, and its remaining activities were transferred to the Military Personnel Division. The Morale Services Division was renamed the Information and Education Division on 9 August 1944, but its functions were not altered. The two divisions under the Director of Military Training—the Military Training Division and the Army Specialized Training Division—were abolished on 17 August 1944 and replaced by a Training Requirements Division, a Troop Training Division, and a School Division. There were certain other adjustments in the staff organization, such as the transfer of supervisory responsibility of Government life insurance work from The Adjutant General to the Fiscal Director. In general, however, there were few changes in staff structure or responsibility.

One service command, the Northwest Service Command, was abolished by War Department General Orders 50, 1945, and its functions were transferred to the Sixth Service Command. A reorganization of service command headquarters was provided for on 15 June 1945 through a revision of the organization manual. The only important change was to permit service commands to adjust their staffs to include both a director of personnel and a director of individual services. The stock control division and the storage division might be combined under the director of supply, if so desired. Station supply organization was redefined in ASF Circular 228, 1945. This marked a shift in emphasis from functional organization of supply to technical service or commodity organization. The director of supply at the post level became a staff officer and technical service officers at the post were made responsible for actual operation of all supply functions from stock record-keeping to warehousing. Combined maintenance shops might be retained at posts in the discretion of the service command. The post quartermaster was given responsibility for local purchasing and the post transportation officer the responsibility for the operation of motor pools.

Reporting

Ten new sections were added to the Monthly Progress Report of the ASF during the year and three were discontinued. Four of the new sections resulted from the supply control system and replaced sections of the "Army Supply Program." In August 1944, a section was added on demobilization planning. This showed the status of ASF planning activities in preparation for Period I (from the defeat of Germany to the defeat of Japan) and Period II (from the the defeat of Japan to final demobilization).

A monthly summary of supply control status was added in November 1944, covering the major item groups for each technical service by dollar value. The results of the work measurement programs were presented in a new section beginning in February 1945. The data reported showed effectiveness, total man-hours expended, measured man-hours, and personnel assigned for selected activities and operations at each installation covered. A new section on depot supply operations was added in February 1945, giving the volume of work processed by depot, in terms of requisition line items. The data showed the number of line items offered for shipment, extracted to procurement, placed on back order, or canceled; the month-end work load; and the record in compliance with certain standard time limits set up for each type of action.

In March 1945, an entirely new section, containing selections from the other sections in the Monthly Progress Report series, was added for distribution to oversea theaters of operation. The articles included were selected for their interest or usefulness to oversea theaters, being either directly related to oversea operations or illustrating standards for ASF performance on functions that were also performed overseas.

The tenth new section added to the Monthly Progress Report was one begun in April 1945, to present special studies of problems conducted jointly by the Control Division and other agencies. The previous section 6 was henceforth divided into two parts, a "Review of the Month" and "Analysis." The latter included the special studies of problems susceptible of quantitative measurement and indicating a need for corrective action.

The three sections discontinued were one on safety, which was thereafter included in the section on administration, and the sections on procurement and distribution, which were replaced by the supply control reports.

Additional progress was made in 1945 in eliminating unnecessary reporting. The system for the control of the initiation of recurring reports set up by the ASF in April 1943, was extended as a War Department procedure, by War Department Circular 168, 1945. ASF Circular 218, 1945, effected certain changes in the ASF reports control system, including those necessitated by the War Department Circular as well as others designed to clarify and improve ASF reports control. The extended system provided for the prior review and approval by the reports control offices of the major Army commands of reports initiated by those commands. It required the examination of all existing and proposed reports to determine the justification of reports in terms of usage, the clarity and completeness of forms and instructions, the availability of the data in some other report or form,

and the clarity of proposed method of presentation of the data. All publications and communications were required to include a reference to the title of the report exactly as approved and of the reports control symbol which was the indication of authorization for the report. The procedure provided further that no agency of the War Department, including oversea commands, would prepare reports subject to the provisions of the system unless they had been assigned reports control symbols by the report control office of the initiating agency. Specific exemption to the provision of the reports control procedure was given to certain types of forms and reports including some non-recurring (one time) reports.

Of the 945 recurring reports prepared by the Army Service Forces as of 1 July 1944, 629 were initiated by ASF agencies and 316 by other agencies. In the period 1 July 1944 through 30 June 1945, there were 228 new reports initiated by the Army Service Forces and 123 required of the ASF by other agencies. During this same period, 346 reports prepared by the ASF were terminated. Two hundred twenty-nine of these had been required by ASF and 117 required of ASF by other agencies. In addition, 125 reports were revised and replaced by 114 reports. The reports control system prevented the introduction of reports not essential to the successful prosecution of the war and offered a means of developing an integrated reporting system. It provided a continuing follow-up on existing reports to eliminate those which had outlived their usefulness and to simplify and improve the others.

Intelligence activities

During the year intelligence agents of the ASF conducted some 16,500 interviews in order to take advantage of the experience and criticisms of soldiers from the use of weapons and equipment to matters of health and morale. These interviews resulted in some 6,500 reports from which many suggestions for improvements were obtained. A new method of packing photographic film in metal containers instead of cardboard boxes was suggested and adopted, eliminating wastage through deterioration of equipment. Another soldier suggested that the tie rods on the 4.2 mortar could be shortened for more effective operation, and this was done. Reports were prepared by the ASF to keep appropriate offices informed about the possibility of an interruption in war production because of situations involving race, labor, or national minorities. The Intelligence Division assumed certain functions previously performed by G-2 of the General Staff, one of which involved the planning of censorship activities in oversea theaters and the procurement of some 300 persons for censorship training. The administration and supervision of the Counter-Intelligence Corps became a function of the Army Service Forces. During the year 1,375 CIC agents were procured, trained, and shipped. Operation reports were received from CIC detachments, published and distributed to all theaters so that the CIC could exchange lessons learned in the field. A declassification program on protected information resulted in an estimated savings of over \$3,500,000 through a reduction in filing personnel and the use of paper. Additional savings were accomplished through the elimination of unnecessary intelligence reports in zone of interior and restrictions placed upon the transmission of certain reports by telephone and telegraph.

Soldier Voting

Public Law 277, which became effective 1 April 1944 and provided for voting by members of the Armed Forces, brought with it certain new responsibilities for the ASF. These included the publication of instructional manuals, the formulation of policies and procedures for the postal handling of ballots and planning a world-wide distribution of balloting and instructional material. The ASF also assisted Air and Ground Force commanders in the administration of their respective soldier voting responsibilities by holding instructional meetings for their soldier voting officers. Instructional manuals were largely prepared with the ASF and then printed for use both in the continental United States and overseas. Posters were drawn and distributed and a screen magazine animation was produced for showing to servicemen overseas.

The provisions of the Federal Law imposed specific restrictions upon the dissemination of literature and similar materials to members of the armed forces through Army channels. Lists of books which had been reviewed and found to contain no objectional political material were issued periodically. All training material prepared by ASF agencies were screened to insure that they complied with the law, as were orientation and educational films. As an illustration of the exactness with which the legal requirements were observed, the Information and Education Division found after the presidential campaign ended that its film coverage of Republican and Democratic activities differed by only 120 feet, or approximately 1 minute's running time. In order to conform to the requirement that the preferences of the armed forces be established for magazines distributed overseas, a survey was conducted of these preferences in this country and overseas. Title V of Public Law 277 was amended by Public Law 418, 21 August 1944, removing any restrictions on books or periodicals sold through Army Exchanges or purchased with nonappropriated funds, or upon motion pictures produced privately and distributed to troops.

Simplification of Procedures

The ASF doubled its efforts during 1945 to reduce the burdens of its work load by simplifying operating procedures. The purpose in each instance was the same—to make one form do the work of two, three, or more existing forms, to include only essential information on a convenient, easily prepared, and readily filed piece of paper, to eliminate unnecessary copies of forms, and reduce their distribution, and to provide handy, readily understood instructions on the preparation of every necessary form. The result of these efforts invariably was to reduce paper work, speed up operations, and save personnel.

During 1945, standardized procedures were established in such fields as the retirement of enlisted personnel, hospital admissions, the recording of clothing and equipment issued to individual soldiers, the return of liberated American prisoners of war, the filing of individual personnel records, the retirement of officers, the operation of induction stations and reception centers, the operation of reception stations, separation from the service, the preparation of individual service records, purchasing procedures at procurement offices, the issue of supplies at depots, the processing requisitions from posts in the

United States, the receipt and issue of laundry, the operation of sales commissaries handling foodstuffs, the taking of depot inventories, daily sick reporting, and recording immunization data. In other fields already studied, still further improvements in procedures were introduced, such as stock control at posts, the processing of overseas requisitions, and the discharge of personnel for physical disability. This list is by no means inclusive. It merely illustrates the various types of procedures required in the work of the ASF where systematic analysis resulted in important economies.

The savings realized by this program were demonstrated in instance after instance. For example, the work sheet used by medical officers during the physical examination of inductees became a basic form, eliminating three other forms completely and saving some 6,000,000 pieces of paper in a year. The standardization of Army discharge pay rolls put an end to the need for preparing a separate pay roll for each discharged enlisted man, reducing the time for computing and checking by 50 percent and saving some 600,000 man-days in pay roll preparation. The number of forms required for the retirement of an enlisted man were reduced from 31 to 15, and the time required was cut from 50 days to 17. The introduction of a consolidated form on individual clothing and equipment eliminated over 11,000,000 pieces of paper formerly prepared in a year's time. The elimination of the individual pay data record for military personnel stationed in the United States saved over 100,000 man-days expended in the preparation of this form. Basic forms for the separation of enlisted men were reduced from 32 to 6, thereby cutting clerical work by at least 30 percent. The War Department General Staff originally allowed the ASF 5 days to separate enlisted personnel; the ASF set up a 2-day target and proved able to do the job in 24 hours. The preparation of the enlisted man's service record was simplified by eliminating 23 general types of information recorded as being of no importance to the Army or recorded elsewhere—this saved some 34,000,000 entries upon these forms in a single year. Standardized purchasing procedures reduced the number of copies of purchase orders or contracts required from as many as 90 to as few as 7. The old practice of copying the name of every enlisted man using a laundry upon a Weekly Collection and Delivery Sheet was killed—this and other changes in laundry procedure eliminated 70,000,000 annual clerical operations. The new sales commissary procedure cut out the posting of over 4,000,000 vouchers and the filing of some 2,000,000 vouchers. These were real and tangible accomplishments, attesting the continuing importance of critical review of every form and every procedure used in doing the Army's business.

During 1945, the ASF reviewed many of the achievements already realized from various economies introduced since 1942. It was found that most of these had more than proved their worth. For example, a simplification in civilian pay roll procedure developed by the ASF was later prescribed for the entire Government by the Bureau of the Budget and the General Accounting Office. Under the new procedure, only the name and the amount due was shown on the monthly civilian pay roll as it went through disbursing offices. Formerly, a card had to be submitted with each pay roll justifying any change in compensation for each individual. With different hours of overtime worked

by most civilians in every pay period, a card had to be prepared to accompany virtually each entry on every pay roll. Instead, the Army preserved complete details about payment—hours of overtime and rate of compensation—on an annual card which was submitted with the pay roll quarterly for examination. The quarterly examination date was staggered to equalize the burden, and the whole payment of civilian pay rolls was greatly speeded up, with much less personnel required to check computations.

A survey in 1943 of space and personnel engaged in office supply and service activities throughout the ASF Headquarters disclosed that some 300 persons and 130,000 square feet of space were being used to handle office supplies. This function was centralized in The Adjutant General's Office, with a saving of 80,000 square feet of space, 85 persons, and \$160,000 per month in operating costs. An inventory of all forms in use by the ASF on 1 April 1944 indicated that there were 179,524 such forms. As of 1 May 1945, there were 136,875 forms in use—a reduction of 24 percent. The actual number eliminated was larger than this, since new forms had come into existence in this 13 months' period as new procedures and new reports were required of the ASF. The immediate objective at the end of the fiscal year 1945 was to reduce all forms used by the ASF to at least 50,000.

An Ordnance program of close supervision of plant production schedules made it possible to ship many items direct to ports or to users in the United States rather than to depots for later shipment. By 1945, this program had achieved direct savings of \$25,000,000 in transportation costs and had resulted in the immediate shipment of 90,000 carloads of ordnance matériel.

The adoption in 1942 of a selective audit procedure in checking accounting systems of cost-plus-a-fixed-fee contractors resulted in decreasing Government accounting personnel assigned to this work from 25 to 75 percent. The use of semiautomatic tape relay equipment enabled the Signal Center to handle a 700 percent increase in traffic load with only a 30 percent increase in traffic load.

In February 1944, Fourth Service Command Headquarters in Atlanta occupied 14 separate locations in the city 4 miles apart. A program of physical consolidation into one area, achieved by interconnecting five buildings in a single block, reduced annual rental payments by \$82,500 and brought personnel reductions which saved \$1,650,000 annually in pay rolls.

These, too, were but examples of a continuing effort which resulted in hundreds and even thousands of individual savings from simplification of forms or procedures, a consolidation of related activities, the introduction of less complicated or time-consuming work methods, the use of improved mechanical devices, and other innovations.

The ASF was alert at all times to improve its operation. This was an endless process. In wartime, with personnel shortages and with the need for careful use of limited available supplies, the work of the ASF could be done in no other way. The alternative was to fail to move men and equipment where needed, fail to give the best medical care to *every* patient, fail to give desired services, fail to pay bills on time, fail to discharge men promptly. The fact that these failures did not occur was the best evidence of the management consciousness prevailing throughout all the various offices of the Army Service Forces.

ARMY SERVICE FORCES KEY PERSONNEL

30 JUNE 1945

Commanding General.....GENERAL BREHON SOMERVELL
Chief of Staff.....LIEUTENANT GENERAL LER. LUTES
 Succeeded Lieutenant General W. D. Styer on 18 April 1945.

OFFICE OF THE COMMANDING GENERAL

Deputy Chief of Staff for Service
Commands.....MAJ. GEN. RICHARD DONOVAN
 Succeeded Brig. Gen. J. F. Battley on 15 June 1945.

Director of Plans and Operations.....MAJ. GEN. DANIEL NOCE
 Succeeded Maj. Gen. W. A. Wood, Jr., on 10 May 1945 who succeeded
 Maj. Gen. LeR. Lutes on 19 April 1945.

Deputy Director.....MAJ. GEN. STANLEY L. SCOTT
 Succeeded Maj. Gen. W. A. Wood, Jr., on 19 April 1945.

Requirements and Stock Control

Division.....BRIG. GEN. T. M. OSBORNE
 Succeeded Col. H. M. Reedall on 1 November 1944.

Planning Division.....MAJ. GEN. STANLEY L. SCOTT

Mobilization Division.....BRIG. GEN. C. E. DISSINGER

Control Division.....MAJ. GEN. C. F. ROBINSON

TECHNICAL SERVICES

The Quartermaster General.....LT. GEN. E. B. GREGORY

The Chief of Ordnance.....LT. GEN. L. H. CAMPBELL, JR.

The Chief of Engineers.....LT. GEN. EUGENE REYBOLD

The Chief of Chemical Warfare Service.....MAJ. GEN. W. N. PORTER

The Surgeon General.....MAJ. GEN. N. T. KIRK

The Chief Signal Officer.....MAJ. GEN. H. C. INGLES

The Chief of Transportation.....MAJ. GEN. C. P. GROSS

SERVICE COMMANDS

<i>First</i> -----	MAJ. GEN. SHERMAN MILES
<i>Second</i> -----	MAJ. GEN. T. A. TERRY
<i>Third</i> -----	MAJ. GEN. PHILLIP HAYES
<i>Fourth</i> -----	MAJ. GEN. E. H. BROOKS
Succeeded Maj. Gen. F. E. Uhl on 10 June 1945.	
<i>Fifth</i> -----	MAJ. GEN. J. L. COLLINS
<i>Sixth</i> -----	MAJ. GEN. DAVID McCOACH, JR.
Succeeded Maj. Gen. R. B. Reynolds on 23 May 1945 who succeeded Maj. Gen. H. S. Aurand on 22 November 1944.	
<i>Seventh</i> -----	MAJ. GEN. C. H. DANIELSON
<i>Eighth</i> -----	LT. GEN. W. H. WALKER
Succeeded Maj. Gen. Richard Donovan on 15 June 1945.	
<i>Ninth</i> -----	MAJ. GEN. W. E. SHEDD
Succeeded Maj. Gen. David McCoach, Jr., on 1 September 1944.	
<i>Military District of Washington</i> -----	MAJ. GEN. C. F. THOMPSON
Succeeded Maj. Gen. J. T. Lewis on 6 September 1944.	

STAFF DIVISIONS

<i>The Adjutant General</i> -----	MAJ. GEN. J. A. ULIO
<i>The Judge Advocate General</i> -----	MAJ. GEN. M. C. CRAMER
<i>The Provost Marshal General</i> -----	MAJ. GEN. A. L. LERCH
<i>Director of Personnel</i> -----	MAJ. GEN. V. L. PETERSON
Succeeded Maj. Gen. J. N. Dalton on 6 June 1945.	
<i>Deputy Director</i> -----	MAJ. GEN. J. N. DALTON
Military Personnel Division-----	COL. C. E. HIXON
Succeeded Brig. Gen. R. B. Reynolds on 22 November 1944.	
Industrial Personnel Division-----	COL. R. F. GOW
Succeeded Mr. W. A. Hughes on 4 September 1944.	
Special Services Division-----	MAJ. GEN. J. W. BYRON
Information and Education Division-----	MAJ. GEN. F. H. OSBORN
Acting Chief of Chaplains-----	BRIG. GEN. L. D. MILLER
Succeeded Maj. Gen. W. R. Arnold on 15 April 1945.	
Personal Affairs Division-----	COL. F. G. MUNSON
<i>Director of Military Training</i> -----	BRIG. GEN. A. G. TRUDEAU
Succeeded Maj. Gen. W. L. Weible on 6 June 1945.	
Training Requirements Division-----	COL. W. L. BENNETT
School Division-----	COL. A. W. CHILTON
Troop Training Division-----	COL. R. T. BEURKET

STAFF DIVISIONS—Continued

<i>Director of Supply</i>	MAJ. GEN. F. A. HEILEMAN
<i>Deputy Director</i>	BRIG. GEN. N. H. MCKAY
Distribution Division.....	COL. R. A. CASE
Storage Division.....	BRIG. GEN. H. W. BEYETTE
Succeeded Col. A. B. Drake on 28 April 1945.	
Maintenance Division.....	COL. M. K. BARROLL, JR.
Succeeded Col. W. S. Conrow on 17 January 1945.	
<i>Director of Matériel</i>	MR. HOWARD BRUCE
Succeeded Maj. Gen. L. D. Clay on 27 November 1944.	
<i>Deputy Director</i>	MAJ. GEN. G. E. EDGERTON
Purchases Division.....	COL. F. C. FOY
Succeeded Brig. Gen. A. J. Browning on 11 September 1944.	
Production Division.....	BRIG. GEN. H. C. MINTON
Research and Development Division	BRIG. GEN. E. A. REGNIER
Succeeded Col. P. R. Faymonville on 27 June 1945 who succeeded Col. R. M. Osborne on 11 January 1945.	
International Division.....	BRIG. GEN. D. G. SHINGLER
Succeeded Maj. Gen. G. E. Edgerton on 19 April 1945.	
Renegotiation Division.....	COL. MAURICE HIRSCH
Succeeded Mr. J. M. Dodge on 1 September 1944.	
Readjustment Division.....	BRIG. GEN. D. N. HAUSEMAN
<i>Fiscal Director</i>	MAJ. GEN. A. H. CARTER
<i>Chief of Finance</i>	MAJ. GEN. H. K. LOUGHRY
<i>Director, Intelligence Division</i>	COL. J. M. ROAMER

Appendix

LIST OF IMPORTANT MANAGEMENT IMPROVEMENTS ACHIEVED IN ASF UP TO 30 JUNE 1945

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| 1. The Supply Control System. | A method of determining procurement requirements based upon ready comparison of estimated demands, stocks on hand, and post issue experience, all shown on one form. Introduced great improvements in and more ready control of procurement programs. |
| 2. Procedure for Oversea Movement. | A standard procedure defining responsibilities of technical services, home ports, and staging areas in moving troops overseas. Greatly improved all troop movements. |
| 3. Procedure for Oversea Replacements. | Similar procedure for individual replacements. |
| 4. Stock Control for Posts--- | Standard procedure for fixing quantities of supplies to be held at Army posts, reduced stocks on hand, insured careful management of all supplies, and fixed requisitioning procedures to avoid overburdening depots. |
| 5. Depot Missions----- | A program which carefully defined the type of supplies to be stocked in all depots and gave stockage information to all interested parties, thus avoiding confusion in routing supply requisitions. |
| 6. Identification of Individual Shipments. | A standard method of marking all cargo shipped overseas to identify shipper, receiver, and contents. |
| 7. Procurement Assignment Board. | An agency for centralizing procurement of like items in a single service, reducing procurement and storage quantities. Over 3,000 items centralized in year ending 30 June 1945. |
| 8. Food Service Program----- | A program to improve messing operations and menus, to reduce food requirements, and to cut food wastage. Wastage cut 50 percent between October 1943 and June 1944. Total annual savings estimated at 100 million dollars. |
| 9. Army Conservation Program. | A program to make all military personnel conscious of the need for careful maintenance of equipment and clothes, as well as to save electricity and other consumption. |
| 10. Publications Control----- | Required all ASF originated publications to have approval of review board, cut volume by 50 percent in 1944, consolidated field printing plants, and reduced volume of field and contract printing through budgetary restrictions. |
| 11. Standard Publications Program. | Rapid reproduction of necessary publications, by having 4 categories and procedures whereby plates were flown to various cities for printing near central points of distribution. Cut distribution time for manuals from 90 to 25 days, for orders from 25 to 9 days. |

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| 12. Company Pricing Program. | Procedure for review of company pricing policies and financial position as a general guide on individual contract negotiation, thus providing broader and fairer basis for finding lower prices. |
| 13. Consolidation of Training Centers. | Concentration of training in fewer locations as load declined—19 replacement training centers and 11 unit training centers concentrated into 13 ASF training centers. |
| 14. Preactivation Training Program. | Advance designation of personnel for units while still being trained as individuals, thus hastening unit training. |
| 15. Decentralization of Assignment Procedures. | Fixed responsibility for personnel assignments in ASF upon training centers and service commands, rather than ASF Headquarters, thus cutting number of field centers reporting to Washington from 1,900 to 36, and the types of installations for assignment from 65 to 37. |
| 16. Pretermination Planning Program | Advance agreements on methods of fixing costs of settling termination contracts, thus hastening settlements—some 1,000 such informal agreements by 1945. |
| 17. Troop Movements Scheduling. | Exact time of troop movements within a 1-week range fixed by Chief of Transportation, thus insuring maximum utilization of railway equipment. At one time, 7 divisions were moved throughout the United States with one set of rail equipment. |
| 18. Consolidating Station Operations. | Less than carload lots of freight consolidated into carload lots to reduce freight charges and car demands—686,000 tons consolidated in fiscal year 1944 and 1,000,000 tons in 1945. |
| 19. Shipping Period Cycle System. | Each month divided into two shipping periods—convoys formed, ships loaded, supplies brought from depots on a standard, prearranged basis, saving manpower and insuring full loading. |
| 20. Block-Release System---- | Method of preventing congestion in ports, requiring a release on all freight moving from depots and plants to ports—of 119,000 cars unloaded in a month, only 36 on hand over 30 days on 30 June 1944. |
| 21. Improved Loading Program. | Palletized loads and deck loading insured utilization of all space, saving need for additional ships. |
| 22. Cost accounting on Utilities and Repairs. | A means of checking expenditures at posts to insure reduction of high cost operations. |
| 23. Records Management Program. | Periodic retirement of files as accumulated, destruction of useless papers, microfilming to lessen volume of essential files—official files reduced 50 percent and essential files reduced another 50 percent by weeding out and microfilming. |
| 24. Reports Control----- | Elimination of nonessential reports and review of all existing and new reports to insure usefulness—at beginning eliminated some 2,900 reports. |
| 25. Work Simplification Program. | A program for careful analysis of clerical and materials handling operations, to equalize load among existing personnel and to reduce waste motion and unnecessary operations. In the year ending 30 June 1945, about 20 percent of some 475,000 persons surveyed were saved. |
| 26. War Department Shipping Document. | A single form developed to cover all operations in the shipment of supplies from depots to posts or overseas, thereby eliminating the preparation of some 6,000,000 shipping tickets a month, the preparation and mailing of 2,500,000 |

- acknowledgments of receipt, and property accountability procedures at depots—this last alone saving the need for 500 clerks at ports.
27. Procedures for Discharge of Patients from Hospitals. Reduced required forms from 54 to 19 and the number of copies from 110 to 56; reduced time required from 3 weeks to 3 days, and saved 20,000 beds a year in hospitals.
 28. Sales Commissary Procedure. Standardized procedures for issue of foodstuffs to sales commissaries, eliminating each year the preparation of some 15,000,000 issue slips, 1,350,000 requisition and inventory forms, and 750,000 copies of report of cash collections.
 29. Physical Reclassification of Officers. A new procedure reduced the average hospitalization of an officer being physically reclassified by approximately 29 days, with an annual savings of \$5,000,000.
 30. Payment of Telephone and Telegraph Bills. A study of this activity resulted in a "Manual of Administrative Procedures for Communications Services" prescribing procedures which resulted in a 30 percent saving in personnel.
 31. Officer Promotion Procedures. A standard procedure for preparing and processing officer promotions was developed which resulted in an estimated annual savings of 550,000 man-hours and 2,500,000 sheets of paper. This procedure was also adopted by the Army Air Forces.
 32. Tonnage Carried by Railroad Cars. By means of a continuous analysis of freight moving on Government bills of lading, heavier loadings per car have resulted in an annual saving equivalent to 150,000 cars.
 33. Freight Rates----- Through informal negotiations with the railroads, and by formal cases presented to the ICC an annual savings in freight cost of some 39 million dollars was obtained.
 34. Use of Inland Waterways. A program of routing Army freight via inland waterways whenever practicable resulted in a 3-million-dollar saving in transportation costs in the 3 years.
 35. Standard Procedure for Armed Forces Induction Stations. Simplified procedures made the medical worksheet a basic form for induction processing, eliminating three forms and saving an estimated 6,000,000 documents a year.
 36. Regular Monthly Army Pay Rolls and Army Discharge Pay Rolls. "Remarks" entries required on all regular monthly Army pay rolls and all Army discharge pay rolls were reduced and standardized in the fall of 1944. "Remarks" data were reduced 30 percent on the monthly Army pay rolls and 50 percent on the discharge pay rolls. Preparation, consulting, and checking time was reduced 30 percent. A new final payment pay roll for discharges was developed to permit the insertion of several names on one pay roll. Previously, a separate pay roll was prepared for each enlisted man being discharged. As a result, the time required for preparation, computing and checking of these pay rolls was reduced 50 percent. The estimated savings for this procedure were some 600,000 man-days per year eliminated in preparation of pay rolls and over 350,000 copies of documents eliminated per year.
 37. Retirement of Enlisted Personnel. Simplified procedures to accomplish retirement of enlisted personnel, reducing the number of forms from 31 to 15 and expediting the verification of length of service. Previously, retirement from hospitals required from 50 to 60 days. This was reduced to 17 days and an

estimated savings per year on the procedure were about 62,000 copies of documents eliminated and some 1,800 hospital beds made available.

38. Service Record Form----- The extract from service record form was redesigned to facilitate preparation and reduce the information required. Approximately one-half of the data for which space was provided on the old form was eliminated from the revised form and the time required for preparation was reduced approximately 60 percent.
39. Hospital Admission Records. The basic forms used for hospital admission records were simplified. Where formerly six basic admission forms had been prepared on the typewriter in six separate operations, the separate operations were eliminated by one typing of the constant information on a mimeographed stencil and the reproduction of the information on the six forms.
40. Individual Clothing and Equipment Records. A consolidated form was developed early in 1945 to replace the individual clothing and equipment record, the individual equipment record, and the individual clothing and equipment record—quartermaster property account. This consolidation resulted in an estimated yearly savings of over 11 million documents.
41. Personnel File Practices--- Standard procedures were established whereby the 201 file traveled with the enlisted man or officer, and when discharge or release from active duty occurred, the file was forwarded to the Office of The Adjutant General. Formerly each station at which an enlisted man or officer was assigned established and maintained a permanent 201 file covering his period of service at that post. Under the new procedure, the retention for each type of paper was specified and approximately 75 percent of the papers normally filed were destroyed at the end of the specified period. Some 15,000 file cabinets were made available for use through the destruction of these nonessential papers.
42. Reception Center Operations Procedures. A processing schedule was developed which reduced the stay at reception centers by 1 day for over half of the enlisted men. A 1-page form for enlisted men's initial family allowance pay roll was substituted for a 3-page form and an initial issue slip form for recording issues for up to 15 men was substituted for a copy of the individual clothing and equipment record prepared for each man. As a result of the simplified procedure, it was estimated that over 900,000 documents per year were eliminated.
43. Separation Centers----- A simplified procedure reduced the number of basic forms prepared for each enlisted man and officer from 32 to 6, cutting clerical work 30 percent. The original War Department plan had allowed 5 days for separation center processing. ASF reduced it to 2 days. The estimated savings were computed as some 500,000,000 documents eliminated from the entire demobilization job.
44. Processing Shipping Documents at Ports of Embarkation. Early in 1945, procedures for processing shipping documents at ports of embarkation were revised and the copies of documents required by the port reduced by six on each oversea shipment. Over 16 million copies of documents per year were eliminated.

45. Depot Supply Procedures. Depot supply procedures were standardized for all depots operated by technical services of the Army Service Forces, simplifying the receipt and issue of supplies, the processing of reports of survey and inventory adjustments, local purchases, and the receipt of excess supplies returned from stations and ports of embarkation.
46. Repairs and Utilities Materials. Each service command established a repairs and utilities supply warehouse and a system whereby excess repairs and utilities materials at posts were reported to service command headquarters and, if desired, shipped to the service command warehouse for use in filling requisitions. Each service command also stored all standby supplies except minimum essentials required at each station for emergency purposes. Redistributed 5 million dollars worth of property, and reduced inventories by 20,000,000.
47. Preparation of Legal Opinions. Formerly legal opinions of The Judge Advocate General's Office were several pages in length and recited history of legislation behind particular statute involved, and precedents upon which the opinion was based. Under a new procedure a supporting memorandum was prepared, but the opinion dispatched was a condensed form, usually only one or two short paragraphs, giving only the answer to the problem. A savings in typing personnel was made possible by the new procedure.
48. Civilian Pay Roll System. A new procedure, later prescribed by the General Accounting Office for all Government agencies, simplified the preparation of the semimonthly pay rolls to show simply name and amount, and preserved the complete details of the payment on an annual card. Formerly, a card had to be submitted with each pay roll justifying individual changes. The annual card is now audited quarterly which dovetailing with the pay roll periods considerably reduces the work load involved and levels out the peak load periods. Payments to civilian employees separating from Federal service were simplified by local payments of terminal leave in a lump sum and by local refund of civil-service retirement deductions.
49. Official Travel. A new procedure prescribed a per diem in lieu of the mileage method of reimbursement to officer personnel for expenses incident to the performance of official travel on a temporary basis, thus reducing the expenditure of public funds and vastly simplifying the computation and payment of such travel accounts. Under the mileage system, an official trip of 5 days might return for instance \$200 to an officer making an inspection of 1 day at some distant installation (round-trip of 4,000 miles). Under the per diem system only \$35 (\$7 per day) would be allowed for this duty. The monetary advantages of brief trips covering long distances were nullified, and the per-diem standard of \$7 per day for expenses resulted in more careful planning of official travel.
50. Coordination of Field Auditing. Field audit coordination committees were established to avoid duplication of auditing when a contractor dealt with more than one agency of

the War Department or with the War and Navy Departments. Also, the principle of selective auditing was adopted in place of the previous policy of a 100-percent detailed audit of all transactions.

51. Office Services and Supplies. In 1943 a survey was made of the space and personnel engaged in office supply and service activities within the entire Army Service Forces. The survey disclosed that some 130,000 square feet of space was being used to house office supplies, and approximately 300 people were engaged in office supply functions in the Army Service Forces. As a result of the survey these functions were centralized in The Adjutant General's Office resulting in a savings of about 80,000 square feet of space, 85 persons, and \$100,000 per month in operating costs.
52. Forms Standardization. At one time it was estimated that there were 200,000 different forms in the Army Service Forces. A program was inaugurated to standardize and reduce the number of forms used, and Forms Design and Standardization Sections were established in the headquarters of staff divisions, technical services, and service commands. These headquarters decentralized the activity to the field for more effective administration. A forms inventory taken as of 1 April 1944 indicated that there were 179,524 forms in use in the Army Service Forces. As of 1 May 1945, there were only 136,875 forms in use, a reduction of 42,649 or 23.8 percent. There were more forms than this actually eliminated as a survey showed that an average of 3,308 different forms were created each month because of new directives and changes in procedures. The present objective of the forms program is to reduce all ASF forms to an inventory of 50,000. Economies are also obtained by controls exercised over manifolding or special forms. One of these forms in the Transportation Corps was replaced by a style better suited to the job, and a savings of \$22,000 was made on the first order.
53. General Hospital System. Because of the scarcity of outstanding medical specialists the functions of particular general hospitals were specialized as amputation centers, neurological centers, etc. Accordingly, the relatively few top-flight specialists in each field were placed in a few large institutions where they could reach and help the greatest number of patients needing the particular type of care in which each excelled. By this method special care was given to more than twice the number of patients for which the general hospital system was originally equipped to care, and this was done in spite of a reduction in the number of specialists engaged in the work.
54. Hospital Reports to Washington. A revision in the procedure for submitting medical reports to the Office of The Surgeon General eliminated the need for 80 full-time clerks in Washington and made it possible for medical installations in the field to omit the preparation of 250,000 report cards for 1944 alone.
55. Reciprocal Hospitalization of Army and Navy Personnel, and Bills for Out-Patient Treatment. The Office of The Surgeon General initiated and arranged with the Navy for reciprocal hospitalization of Army and Navy personnel without the necessity of billing for such service.

- Effectuated by an agreement between the two Secretaries, the new procedure eliminated a large amount of reporting, billing, bookkeeping, payment and auditing procedures, not only in both Departments but also in the hospitals, finance offices, and the General Accounting Office.
56. Supply of Ammunition... The adoption of a credit system for the supply of ammunition under lend-lease and for training permitted either direct shipments from loading plants or from depots nearest the port of export. This procedure resulted in the elimination of many cross-hauls and back-hauls, and a savings of an estimated \$500,000 per month.
57. Signal Corps Message Book. A new message book was developed as a modification of Message Book-210-A which not only increased its usefulness, but cost about 45 percent less for each of the new books. Since there are approximately 30,000,000 message books used a year, an annual savings of about \$1,300,000 was attained.
58. War Department Signal Center. When the traffic load in the War Department Signal Center quadrupled during the first year of the war, it became apparent that ordinary methods of direct teletypewriter operation of circuits were wasteful, and that only through more efficient procedures could the immense volume of traffic yet to come be handled satisfactorily. Early in 1943, the installation of the most modern type of semi-automatic tape relay equipment was started. This equipment permitted the relay of equipment messages with a minimum of delay and manual handling. From January 1943 to January 1945, the number of personnel in the War Department Signal Center only increased from 722 to 790 while the words handled per day increased from 780,000 to 8,250,000, a 30-percent increase in personnel as against a 700-percent increase in traffic load.
59. Monthly Progress Report. By 30 June 1945 the ASF had a Monthly Progress Report of 27 sections providing a complete statistical record of progress made in the performance of various activities. This enabled the commanding general and staff divisions to check on favorable or unfavorable trends.
60. Civilian Personnel Organization. Immediately after its creation, the ASF built up civilian personnel staff units at each level of command and developed a civilian personnel program with primary emphasis upon proper placement, in-service training, employee welfare activities, employee counseling, and employee evaluation. This program resulted in better utilization of employee skills and less civilian turn-over.
61. Consolidation of Fiscal and Finance Activities. The ASF consolidated in one organization of budgetary fiscal service, accounting, and disbursing activities with most operations decentralized to the field and emphasis in Washington upon proper staff planning. This resulted in greatly improved fiscal operations and the elimination of the need for a large central staff in Washington.
62. Improved Investigative Procedure. All necessary investigative operations were decentralized to field offices and the Washington office was reduced from 26 officers and 118

civilians to 10 officers and 9 civilians. A complicated 8-page personnel investigation form was reduced to a single page and clerical operations were cut by 1,640,000 man-hours a year. Nearly 400 clerical workers were released in service command headquarters.

63. Service Command Reorganization. The Army corps areas, shorn of tactical authority and assigned to the ASF, were reorganized into service commands and given responsibility for field performance of all ASF activities except procurement, storage, transportation, and construction. This program promoted improved coordination in the field of all interrelated activities.
64. Mail Handling----- A mail manual was published to standardize practices for handling military mail at all Army installations, regular postal inspection of Army mail service was introduced and other practices modified to insure prompt distribution of all military mail.
65. Petroleum Organization-- The responsibility for determining requirements for petroleum products for testing, for purchasing, for storage, and for supervising local procurement was vested in a single organization—the Fuels and Lubricants Division in the Office of the Quartermaster General. This brought about a centralized responsibility for all phases of petroleum procurement and effected considerable savings in testing, purchasing, and storage.
66. Wage Administration---- Authority was delegated to all service commands to make wage surveys for civilian employees subject to final approval by headquarters. ASF in accordance with delegation of responsibility from the National War Labor Board. Vigorous prosecution of wage surveys resulted in equalizing salaries among employees in various areas.
67. Army Travel Bureaus--- The ASF established central offices for the issuance of travel orders, travel requests, and the making of travel reservations. This resulted in speeding up the time required and eliminating much paper work in official travel, and insured adequate accommodations for official travel. In 1945 reservations were obtained in all but 3 percent of the requests.
68. Program for More Effective Utilization of Personnel. Between March and September 1943 a systematic effort was made to eliminate unnecessary activities by requiring all field installations to review their work and to submit recommendations for elimination of any activities regarded as unnecessary. Altogether 3,547 recommendations were acted upon, of which 1,900 were approved. As a result, 891 nonessential activities and 682 nonessential records were eliminated while in another 457 cases authority for final action was decentralized to the field.
69. Handling of Excess and Surplus Property. Procedures for the determination of excess and salvageable property were greatly simplified to bring about speedy action. Centralization of excess property was cut to types of items in which other agencies were interested in order to avoid unnecessary paperwork and time-consuming activity.
70. Standard Nomenclature... A program was begun in 1944 to bring about standard nomenclature of identical spare parts

- to promote interchangeability and reduce spare parts procurement. By 30 June 1945 some 520,000 spare parts had been reviewed with a 30 percent reduction in catalog numbers.
71. Personnel Control System. A standard system of personnel authorization was introduced by the ASF in June 1943, whereby bulk authorizations of personnel were made to technical services and service commands for allotment in turn to field installations. The personnel reporting followed the system of personnel authorization and brought all personnel needs under careful review by ASF headquarters.
72. Utilization of Electrical Accounting Machines. Systematic inspection was introduced of all machine record units in the ASF to bring about centralization of equipment, standardized instructions on their use, and the elimination of projects for which machine tabulation was not economical. In addition, a training program to insure competent operation of electrical accounting machines was introduced. The result was elimination of many units and a sizeable curtailment in the types of machine tabulating work done in the ASF.
73. Stockage of Forms and Publications. The publication and storage of commonly used forms was centralized in The Adjutant General's Office and service command depots. Centralized forms and publications distribution warehouses were established at posts. A modified stock control system on publications was introduced which eliminated many obsolete forms and redistributed excess supplies. In a 6-month period over 5,000 tons of obsolete forms were salvaged.
74. Cancellation of Allotments by Military Personnel. A simplified procedure was introduced whereby soldiers and officers could terminate all allotments of pay. One form replaced 16 previously in existence with corresponding savings and paperwork. Field checks revealed that the new procedure prevented many errors in issuing checks for military personnel.
75. Officer Assignment Program. Between November 1943 and April 1944 a full scale review was made of the classification and assignment of officer personnel in the ASF. This program promoted better utilization of officer skills and raised the percentage of good assignments to 97 percent of all officer personnel.
76. Care of Deceased Personnel within the United States. A study of the administrative procedures involved resulted in the issuance of a training manual furnishing for the first time in one book complete instructions for handling of deceased personnel. Under the new procedure the elapsed time for handling the deceased was shortened, and 22 forms and 75 copies of the forms were eliminated.
77. Discharges and Release from Active Duty. A new procedure was developed and published in a War Department manual which standardized procedures affecting discharges or release from active duty at all installations other than separation centers. Yearly savings were estimated at 17,000 hospital beds made available, over 6 million man-days of enlisted personnel stay at hospitals eliminated, and over 22 million copies of documents eliminated.
78. Hospital Admission Records. Basic forms were revised and standardized procedures were prescribed for all general and

- regional type hospitals in the continental United States. Where formerly six basic admission forms had been prepared on the typewriter in six separate operations the separate operations were eliminated by one typing of the constant information on a mimeographed stencil and the reproduction of the information on the six forms.
79. Immunization Register and Medical Data Form. A revision of the form and a revised procedure of preparation resulted in an estimated yearly elimination of over 6½ million documents.
 80. Individual clothing slip form. By extending usage of the existing property slip to requesting clothing, separate printing and stocking of two forms to provide for field usage of approximately 2,100,000 copies annually were eliminated and procedures simplified.
 81. Return, Processing, and Disposition of Liberated American Prisoners of War from Europe. Basic standardized procedures were developed and published in an ASF directive defining the responsibilities of ASF staff divisions, technical services, and service commands. Prior to this there had been numerous directives covering some phases of the activity, and other phases had not been covered at all.
 82. Pay Data Card for Enlisted Personnel. Under a new procedure this form is now initiated only when a soldier is alerted for oversea duty, and is not maintained while the soldier is performing service within the United States. Over 100,000 man-days per year formerly utilized in the preparation of the form were saved.
 83. Physical Reclassification and Retirement of Officers. The procedures were simplified and standardized. Authority to issue orders was decentralized to station commanders of medical facilities authorized to reclassify officers and conduct retirement procedures. Unnecessary reviews were eliminated; officers stays at hospitals were reduced by an average of 29 days and transportation costs were reduced materially by increasing the number of disposition and retirement boards at hospitals. An estimated 1,000 hospital beds a year were made available and over 360,000 man-days of officer stays at hospitals eliminated.
 84. Reception Stations Processing of Enlisted Personnel and Officers Returned from Overseas Under the Rotation Plan. New procedures speeded up the processing of records by the use of mechanical office equipment. Time schedules were established for processing and provisions made to process many records prior to the actual arrival of returning personnel. Paying facilities were included in the processing line and pay tables prescribed to expedite computation of partial pay. A simple pay-roll form was substituted to cover five types of pay rolls formerly handled on four different forms. The preparation of certain forms was simplified and other forms were completely eliminated.
 85. Service Records----- The preparation of service records was simplified and the numbering of required entries reduced to a minimum. The revised procedures eliminated 23 general classifications of information and some 34 million entries per year.
 86. Purchasing Procedure for Procurement Offices. The procedure in each technical service in the ASF was simplified, standardized, and for the first time published in one volume. The revised procedures reduced the range of purchase orders and contracts distributed by technical services which had formerly been from 7 to 90 copies to from 7 to 26 copies. This, together with other simplifications in documentation, resulted in an

- estimated yearly savings of 18 million copies of documents eliminated.
87. Information Furnished Oversea Theaters on Army Shipments. A manual covering War Department practices was revised and expanded to a joint Army-Navy manual which established standard procedures for the flow of information covering movement of supplies, personnel, and baggage for both Army and the Navy from the United States to theaters of operation, between theaters of operation, and from theaters of operation back to the United States. Among the improvements obtained was the facilitation of the advance planning of supply programs by the overseas theaters. A more effective and prompt disposition of supplies upon arrival was possible and quicker turn-around of ships resulted.
88. Organizational Structure for Supply Depots. A standard organizational structure was published for all supply depots operated by the technical services of the Army Service Forces in order to increase the efficiency of administration.
89. Processing Domestic Requisitions. Development of simplified procedures expedited station supply operations and facilitated planning by establishing specific time limits for the completion of each supply action and by furnishing prompt information to stations on the status of their requisitions.
90. Laundry and Dry Cleaning. Standard procedures were developed for receiving, returning, and accounting for laundry and dry-cleaning bundles and for supplies and payments in fixed quartermaster laundries and dry-cleaning plants located in the United States. Savings under the new procedure were estimated at some 400,000 copies of documents and 70 million clerical operations eliminated.
91. Subsistence Supplies at Sales Commissaries in the United States. Standardized and simplified procedures were developed for the requisition, purchase, receipt, issue, shipment, and accounting for subsistence supplies at all sales commissaries located in the United States. The triple posting of over 2 million vouchers per year was reduced to one posting and the processing and filing of one additional copy of each of these 2 million vouchers was eliminated. Accounting for charge sales was simplified and the closing of sales officers' accounts at the end of the month was speeded up by approximately 15 days. The procedure eliminated the preparation of some 300,000 separate documents per year; posting of 4,300,000 vouchers and filing of 2,150,000 vouchers were eliminated.
92. Supplies at Posts, Camps, and Stations directly supplying Troops in the United States. Procedures were developed for the issue of supplies by posts, camps, and stations of the ASF and extended to all posts, camps, and stations in the continental United States. Army-wide uniform and simplified methods were thus established for the requisition, purchase, receipt, issue, shipment, and accounting for matériel and supplies (except subsistence supplies, blank forms, publications and harbor defense property) at posts, camps, stations, Army Air Forces bases and fields, and other War Department installations directly supplying troops in the United States.
93. Depot Inventories. . . . Standard inventory procedures and specified mandatory frequencies for taking depot inventories

were developed which prescribed that periodic inventories were to be taken and the most practical method to be employed for taking the actual physical count was specified. The accuracy of depot stock records was substantially improved, thus making the stock control system of the ASF more reliable, resulting in more effective supply operations.

94. Oversea Supply----- As a result of a study of the problems involved of the time required to effect oversea supply, it was decided that by eliminating schedules for west coast ports the current staggered initial and limiting dates, the over-all order and shipping time to the theater might be reduced. The west coast shipping period schedules were shortened 10 days to an over-all total of 65 days as a result of this schedule.
95. The Army Supply System- A study was made of the procedural directives issued in connection with the various phases of the Army Supply System. The study revealed that these directives covered almost 3,800 printed pages and contained about 1,300,000 words. Recommendations of the study to reduce these directives to a series of flow charts and manuals were approved. The new procedure when completed will standardize operations within the technical services and coordinate the activities of the staff divisions.
96. Equipment for Kitchen Cars. Standardized lists of equipment for kitchen cars were developed and standardized, kit specifications were worked out. A manual was prepared illustrating not only what equipment should be included and how a car should be set up, but also how the equipment should be cleaned, packed, and delivered to a transportation officer for return to originating station. The use of the manual promoted the rapid assembly of supplies and equipment for departing troop trains and enabled the prompt return of equipment in condition for immediate reissue.
97. Subsisting Persons Traveling with Group Movements of Patients from Debarkation Hospitals. A simplified procedure was established for subsisting persons traveling in connection with group movements of patients from debarkation hospitals, which completely clarified former procedures. A simplified accounting system was established in connection with the procedure for the operating of messes and the subsisting of persons when no Army messing facilities were available. The system substantially reduced the burden of handling hospital train accounts at the home stations of the hospital trains. The accounting system was developed in detail, forms were designed and published, and the administrative detail formerly required of train ration officers was reduced.
98. Linen Control in General Hospitals. Standard procedures for linen control were developed and established in all general hospitals in the United States except the Army Medical Center. These resulted in the elimination of all intermediate stocking between the laundry and the ward, and all counting and checking except at the laundry. From a multiplicity of forms the new procedure used one daily requisition and one quota sheet for each

- ward. One general hospital has already accomplished a saving equivalent to 12 persons.
99. Daily Sick Report----- A procedure was established for the maintenance of the Daily Sick Report (WD AGO Form 5) which eliminated 16/18 of all entries required by the existing sick report procedure. It is estimated that over 380,000 man-days per year will be saved by the revised procedure in zone of the interior alone, and that over 215,000 man days per year would be saved at overseas zones of communications.
100. Processing Oversea Requisitions. Standard procedures were developed for processing overseas requisitions which expedited overseas supply by establishing specific processing time limits and by eliminating uncontrolled extracting of overseas requisitions from one source of supply to another. Information on supply availability is provided to ports of embarkation for cargo planning, and standard information on supply availability is furnished to the overseas theaters. Later improvements in the original procedure effected substantial savings in the preparation and distribution of papers.
101. American Prisoner of War Information Bureau. The use of automatic typewriters, form letters, and master flexoline lists of all American prisoners of war permitted one typing operation to serve more than one purpose. The maximum use of microfilm and photostat for reproduction of letters, documents, and lists and an addressograph system used for rapid addressing of parcel labels sent to next of kin of American prisoners of war and interned civilians also achieved many economies in operation.
102. "Master Inspection Responsibility List" and "List of Approved Commercial Reproducers of Classified Materials." Maintenance of these lists on flexoline strips, and reproduction of lists by photographic methods instead of typing and mimeographing, reduced by almost 80 percent the clerical work involved and eliminated the possibility of error in reproduction.
103. Fiscal Pay Voucher for Officers. A new fiscal pay voucher for officers and other military personnel who certified their own vouchers was developed which made possible the compiling of a final pay and mileage as well as mustering-out pay on a single voucher.
104. Typing of Constant Data on Forms. Typing of constant data on forms, particularly names, army serial numbers, etc., was reduced to a minimum.
105. Transmittal Sheets and Memo Routing Slips. Standard WD AGO forms for transmittal sheets and memo routing slips were developed which replaced hundreds of forms formerly used by the headquarters, Army Service Forces, and subordinate offices in Washington.
106. Form for Oaths of Office. Various forms for oath of office were combined into one form.
107. AGO Central Microfilming Plant. A central plant was established, combining three separate plants in Washington; the number of employees was reduced from 349 to 220 within 6 months with 10 percent increase in production.
108. Mail and Telegraph Messages. A message form was designed and introduced to encourage the sending of brief messages by mail as well as telegraph as a measure to reduce traffic by electrical means.
109. Decorations and Awards. The entire list of forms used in connection with decorations and awards were redesigned and specialized forms were developed with the

maximum data printed on the form. Cards were also used as the last copy of each form making it unnecessary to prepare a folder for filing since the name of the individual appears in the left-hand corner of the card. Machines were procured which would imprint the names of recipients of medals on the medals thereby eliminating hand engraving.

110. Reports of Casualties_____ At first individual reports and telegrams were prepared on each Army casualty and distributed to the various interested agencies and next of kin. Under a new procedure one standard form was developed on document paper and from it were reproduced reports for the various agencies and the telegram for the next of kin. The new system was used for reporting deaths, missing in action, interned, prisoners of war, and in appropriate cases return to duty. A form was also developed for preparing in one operation reports on wounded, injured, and seriously ill and return to duty. The reporting of domestic deaths was simplified by handling this on a documat and producing the necessary copies therefrom. The new procedures resulted in a reduction in the cost of operation, materials used, reporting operations, and the time required in preparation of reports.
111. Morning Report----- As a result of a study of the Company Morning Report, the Headquarters Morning Report, and the Report of Change, the Company and the Headquarters morning reports were consolidated and the Report of Change was eliminated. Revised morning reports were prepared and forwarded in triplicate to Machine Records Units for recording. The revised procedure took the burden of reporting from personnel sections and placed it on Machine Records Units. One entire procedure was thus eliminated and the procedure was transferred from typewriter preparation to machine preparation.
112. Hospital inspection----- Formerly, inspection visits to hospitals were made independently by various representatives of the Surgeon General's Office and service command headquarters with little or no coordination. A new coordinated type of inspection, after testing, was put into effect in April 1944. The new inspections, taking 1 day or at most 2 days, were predicated on taking the maximum amount of corrective action on the spot, and thus avoiding correspondence and indorsements, covering both professional and administrative matters.
113. Housekeeping and Administration Services in the Signal Corps. In 1943 steps were initiated to consolidate the services and function common to two or more Signal field installations at the same general location. These included utility services, performance of local housekeeping and administration services, the processing of military and civilian personnel activities, writing of travel orders, handling of fiscal and legal functions, and other miscellaneous services. The program resulted in considerable centralization and a saving of personnel, equipment, space, and reports. It also provided for uniformity of procedures and operations, and for simplification of staff supervision by headquarters. It was

- estimated that at least 500 additional personnel would be required if these services had been performed by each individual installation.
114. Delivery of Messages by Signal Corps. The use of pneumatic tubes and conveyor belts within the Signal Center expedited the transfer of messages to various locations and eliminated the need for messenger service.
115. Message Center of Chemical Warfare Service. A survey of the CWS message center resulted in the adoption of new procedures and a reduction in the number of employees from 145 in September 1942, to 86 in March 1943, and 53 in April 1945. A follow-up study reduced the number of personnel from 53 to 39 in July 1945.
116. Control of nonappropriated Funds. AR 210-50, 210-65, and 210-70, with War Department Circulars 218 and 219 set up guiding principles on financial operations of Army exchanges, Army motion picture theaters, and messes. These revenue-producing activities were to be kept solvent at all times, the profits were to be used for the benefit of the post where accumulated except that above specified limits the income was to go to the Army Exchange Fund and an Army Central Welfare Fund. Dividends of exchanges were fixed so that excess capital would be paid out during the war. These provisions prevented the accumulation of large funds at posts which might be used for building construction or other improvements, and gave support to exchange activities at small posts.
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